MINISTRY OF ENVIRONMENT

ENVIRONMENTAL AND SOCIAL CODE OF PRACTICE

Construction of a mechanical composting building at the existing IWRMC at Rinbudhoo, Dhaal Atoll

Report Prepared by LAMER Group Pvt Ltd

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January 2021

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Consultants Declaration

I certify that to best of my knowledge the statements made in this Environmental and Social Code of Practice for the construction of a mechanical composting building at the existing IWRMC at Rinbudhoo, Dhaalu Atoll, are true, complete and correct.

Name: Hussein Zahir

Consultant Registration Number: EIA P04-07

Signature:

Company Name: Land and Marine Environmental Resource Group Pvt Ltd

Date: 28th January 2021

Proponent's Declaration

بسم الله الرحمن الرحيم

PREVENT
DOMESTIC
VIOLENCE

Ministry of Environment
Male', Republic of Maldives.

މިނިސްޓްރީ އޮފް އެންވަޔަރަންމަންޓް
މާލެ، ދިވެހިރާއްޖެ.

Date: 27 January 2021

No: 438-WMPC/203/2021/24

Mr. Ibrahim Naeem,
Director General,
Environmental Protection Agency,
Green Building, Handhuvaree Hingun, Maafannu,
Male', 20392, Maldives.

Dear Sir,

Sub: Commitment to undertake Mitigation and Environmental Monitoring

The Environmental and Social Code of Practice (ESCP) prepared for the proposed establishment of the Island Waste and Resource Management Centre (IWRMC) in Dh. Rinbudhoo has been prepared in accordance with the EIA Regulations 2012 and its amendments, issued by the Ministry of Environment.

We would like to confirm our commitment to the proposed mitigation measures and the monitoring programme that has been highlighted in the ESCP report prepared for the above referenced project.

Sincerely,

Amru Adam,
Assistant Director

1 Executive Summary

Background

Rinbudhoo is one of the 7 inhabited islands in Dhaalu Atoll and is located in the north western part of the atoll. The Island Waste and Resource Management Centre (IWRMC) of Rinbudhoo in Dhaalu atoll was constructed in 2018. Upon completion of the IWRMC, it was handed over to the Island Council for registration and operations. The non-biodegradable waste was planned to be reduced in volume through use of appropriate machinery and kept in allocated areas till disposal to regional facility. The compostable waste would be transferred to the compost slab constructed at the site, where windrows-based composting will be undertaken.

However, based on the recommendations provided in feasibility study for the establishment of a regional solid waste management system in Zone 4 & 5, it was decided that mechanical composting is the most feasible technology for treating organic waste generated in Dh. Rinbudhoo. Hence, the Ministry of Environment, through the World Bank funded Maldives Clean Environment Project (MCEP) intends to pilot in-vessel composting in Rinbudhoo, whereby the existing compost slab used for windrow-based composting will be modified slightly to cater for the installation of a composting machine.

The proposed project involves enclosure of the existing compost slab area and undertaking the required utility connections to the structure. Once this is completed, an organic waste converter machine will be installed at the area to undertake mechanical composting of organic waste through an aerobic system.

Key impacts and mitigation measures

All development projects will inevitably have an impact on the environment, both negative and positive. There are a number of actions that can be taken to minimize or avoid impacts altogether. Mitigation measures are selected to reduce or minimise the severity of any predicted adverse environmental effect and improve the overall environmental performance and acceptability (lower environmental damage) of the project from the perspective of construction and operation. Impacts due to the project based on the assessment principles followed are foreseen as low to moderately negative and moderately positive.

Mitigation measures have been proposed for significant environmental impacts that are associated with the project, both during construction and operational phase.

- Measures to ensure proper training in all aspects of the project during both construction and operational phase
- Measures to ensure worker health and safety both during construction and operation

- Measures to minimize impacts on the environment due to air pollution and improper handling of materials and waste
- Measures to ensure safety from fire hazards
- Measures to ensure public health and safety
- Implementation of the Grievance Redress Mechanism which has been formulated by the proponent, both during construction and operations.

Monitoring programme identified in the report will enable the proponent to assess whether the mitigation measures which have been identified in the report are effective. Early identification of negative impacts will enable the proponent to rectify the issue.

To conclude, with due consideration to the environmental components identified and the extent of the project activities and their likely and predicted impacts identified, with proposed mitigation measures and monitoring followed, it is concluded that the project is feasible and justified. Furthermore, the positive benefits due to the project, both to the environment and island community overweigh the negative effects on the environment during the project. The Consultant further recommends the following:

1. Adherence to all relevant legislations, regulations, guidelines and standards during construction and operation of the IWRMC;
2. Establish environmental and occupational health and safety procedures for all relevant components;
3. Installation of renewable energy sources at IWRMC, such as solar panels to source power for operations;
4. Carryout regular consultations with the island council during construction and operation stage of the project.
5. Carryout awareness raising campaigns to increase awareness of the public regarding proposed work;
6. Ensure adequate training is given to IWRMC staff in operations and maintenance of the new compost machine so as to ensure proper implementation of the project at all phases.
7. Encourage greater participation of women, especially during operational stage;
8. Ensure proper supervision and inspection of the IWRMC at regular intervals.
9. Carry out some form of coastal protection work at shoreline near project site to prevent further erosion

1. ފުރަހަ

ތަރުތީބު

ތިރިއަށް ދީ ތަކެތި ހިއްސާ ކުރުމުގެ ގޮތުގައި 7 ގަޑީ ތެރޭގައި ތަކެތި ހިއްސާ ކުރަން ނިންމާފައިވާ ގޮތް ބަޔާންކުރެވެ. ތިރީގައި ދެއްކެވުނު ގޮތަށް ތަކެތި ހިއްސާ ކުރެވޭނެ ގޮތް ބަލާ ދެއްވުމަށް ފާހަގަ ކުރަމެވެ. ތިރީގައި ދެއްކެވުނު ގޮތަށް ތަކެތި ހިއްސާ ކުރުމުގެ ތެރެއިން ކޮންމެ ގޮތެއް ކަމަށް ވިޔަސް ކުރިން ދަންނަވައި ހުށަހަޅާ ފަރާތަކުން ހުށަހަޅާ ގޮތަށް ކަމަށް ވާނަމަ، ހުށަހަޅާ ފަރާތަކުން ހުށަހަޅާ ގޮތަށް ކަމަށް ވާނަމަ، ތިރީގައި ދެއްކެވުނު ގޮތަށް ތަކެތި ހިއްސާ ކުރެވޭނެ ގޮތް ބަލާ ދެއްވުމަށް ފާހަގަ ކުރަމެވެ.

- މަޝްރޫޢުގެ މަޤްޞަދުތަކުގެ ތެރެއިން ދިމާވެދާނެ މައްސަލަތައް ހައްލުކުރުމަށް މިނިސްޓްރީގެ ފަރާތުން ބައިނަލްއަޤްވާމީ ގްރީވަންސް ރެޑްރެސް މެކޭނިޒަމް ތަންފީޒުކުރުން

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މިރިޕޯޓުގެ ނިންމުންތަކާއި ހުށަހެޅުންތައް ބިނާކުރެވިފައިވަނީ މިމަޝްރޫޢުގެ ސަރަހައްދު ތިމާވެށީގެ ބޭސްލައިން ތަޙްލީލުތަކާއި އަސަރުތަކާއި، މިންވަރު އަދި މިއަސަރުތައް ކުރިމަތިލާ ކުރުކޮށް ދިގު މުއްދަތުގައި ހުރިހާ ފިޔަވަޅުތަކާއި، ވެއްޖެނަމަ އަންނަ ބަދަލު ދެނެގަތުމުގެ ގޮތުން ކުރަން ހުރިހާ ކަންތައްތައް ތިމާވެށީގެ މައްސަލަތައް ބޭނުންވާނެކަމާއި ގުޅިގެން ހޯދާ ކަންތައްތަކުގެ ބޭނުން ކުރެވޭތަނެވެ. މިރިޕޯޓުގެ ހުށަހެޅުންތަކުގައި ކުރެވޭ ތަކެތި ހަމަ ދިރިއުޅުމާ ސީދާގޮތުން ކުރިމަތިލާ ދިގުމުއްދަތުގައި ކުރުމުއްދަތުގައި ހުރިހާ ފިޔަވަޅުތަކާއި ކަންތައްތަކުގެ ތަޙުލީލު ހިމެނޭ މިމަޝްރޫޢު ދިރާސާގައި ގެނެސްދެވިފައިވާކަމެވެ. އަދި މިމަޝްރޫޢުގެ ސަރަހައްދު ކުރާ ނުރައްކާ އަސަރުތަކަށް ފައިދާވާނެ މަޝްވަރާތަކެވެ. ހަމަ މިހާރުއްސުރެ، ތިރީގައިވާ ކަންތައްތައް ކުރުމަށް ހުށަހަޅާ ބަދަލުތަކެއް ބާރުއަޅައެވެ.

1. މިމަޝްރޫޢާއި ގުޅުންހުރި ހުރިހާ ފޯރުން، ޖަވާބު، މިންގަނޑުތައް އަދި އެއްބާރުލުމުގައި އެއްގޮތަށް މަސައްކަތް ކުރިއަށް ގެންދިއުން
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4. މި މަޝްރޫޢު ހުރިހާ މަޤްޞަދުއްސަލާމަތުގެ ކޮންސަލްޓަންޓް މަޝްވަރާއާއި ލާޒިމް ހޯދުން
5. މިމަޝްރޫޢާއި ގުޅިގެން މީހުން އަރައިރުމަށް ގެންގުޅޭ ގޮތުން އުފެދާނެ ކަންބޮޑުވުން ހިނގުން
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7. މަޝްރޫޢު މަޤްޞަދުތަކުގައި (ޕްރޮސެސް ތަމްރީން މަޤްޞަދުގައި) އަންގަނުން ބެލެހެއްޓުން ބާރުއެޅުން
8. ކުނި މެނޭޖްކުރުމަށް ހުށަ ސަރަހައްދު މަސައްކަތް ކަރަންޓު ސިސްޓަމް ބޭނުންކުރުމަށް ގޮވާލުން އިންސްޓޯލްކުރުން
9. ކުނިކޮށި އެއްފަރާތް ކުރުމަށް ކުރިމަތިލާ ނުރައްކާތެރި ވަރުގަދަ މަސައްކަތް ކުރުމުގައި އެހީތެރިކަން ހިމާޔަތްކުރުމަށް ކަނޑުވަލު ބާވަތުގެ ތަރުތީބުވުން

2 Introduction

Rinbudhoo is one of the 7 inhabited islands in Dhaalu Atoll and is located in the north western part of the atoll. The Island Waste and Resource Management Centre (IWRMC) of Rinbudhoo in Dhaalu atoll was constructed in 2018, following environmental clearance for the project through an EMP formulated in the same year (Zuhair, 2018). Upon completion of the IWRMC, it was handed over to the Island Council for registration and operations. To summarise the planned operations for the IWRMC then, as per MCEP (2018), the collected waste which had already been segregated at household level would be sorted into compostable and non-compostable waste and the non-compostable inorganic waste would be compacted / crushed / shredded. The compostable waste would be transferred to the compost slab constructed at the site, where windrows-based composting will be undertaken.

However, based on the recommendations provided in feasibility study for the establishment of a regional solid waste management system in Zone 4 & 5, it was decided that mechanical composting is the most feasible technology for treating organic waste generated in Dh. Rinbudhoo. Hence, the Ministry of Environment, through the World Bank funded Maldives Clean Environment Project (MCEP) intends to pilot in-vessel composting in Rinbudhoo, whereby the existing compost slab used for windrow-based composting will be modified slightly to cater for the installation of a composting machine.

The proposed project involves enclosure of the existing compost slab area and undertaking the required utility connections to the structure. Once this is completed, an organic waste converter machine will be installed at the area to undertake mechanical composting of organic waste through an aerobic system.

2.1 Purpose of the report and need for the ESCP

The Environmental Impact Assessment (EIA) Regulation of Maldives (2012/R-27) and amendments gives a list of development projects for which an EIA is required (Schedule Raa of the Regulation). With respect to waste management, EIA is required for three types of projects; installation of incinerators with a capacity of 10 or more tonnes/day, development of landfill using waste and development of large-scale waste management centres (capacity of treating 10 tonnes/day).

As per due process for projects not listed in this Schedule, a screening form for the project was submitted to the Environmental Protection Agency, to assess the level of impact due to the project. Based on this project description and areas of impact, EPA has stated that no further assessment is necessary for the proposed project. At the same time, World Bank (WB), as the funding agency has also carried out screening of the project and stated that an Environmental and Social Code of

Practice should be prepared, based on the TOR issued by WB. As EPA does not require any further document, this ESCP is prepared as required by the WB based on the TOR issued by WB.

2.2 Terms of Reference (TOR)

As stated above, the Terms of Reference issued by World Bank for the project titled "Environmental and Social Code of Practice for projects involved minimal civil works", will be followed for the formulation of this ESCP. The chapters of this report are as per the structure given in this TOR and include the following:

1. Executive summary
2. Introduction
3. Project Description and study area
4. Site description
5. Mitigation Plan and grievance redress mechanism
6. Consultation with Island Council
7. Monitoring programme
8. Conclusion

3 Project Description

The Island Waste and Resource Management Centre (IWRMC) at Rinbudhoo in Dhaalu atoll was constructed in 2018. The structure then constructed composed of:

- a collection bay with a waste storing area and different compartments for storing segregated waste including metals, glass, plastics, paper and hazardous waste. The collection bay also includes an equipment room.
- Compost Slab which is a concrete pad of dimensions 15.0m by 5.0m with thickness of 0.1m laid at 1% slope. This concrete slab is used for simple windrow composting will be constructed.
- Groundwater pump room
- Leachate collection tank
- Perimeter fence

The proposed project involves enclosure of the existing compost slab area and undertaking the required utility connections (power and water) to the structure. Once this is completed, an organic waste converter machine will be installed at the area to undertake mechanical composting of organic waste through an aerobic system. The existing IWRMC is on western side of the island. The location of the existing IWRMC and hence the proposed project is shown in Figure 1, which. The composting area will be developed on the southern side of the IWRMC plot (Figure 2). Figure 3 shows the images of site as it is at present.

Figure 1. Location of Rinbudhoo in Dhaalu Atoll (left, red highlight) and existing IWRMC and project site (right, red highlight)

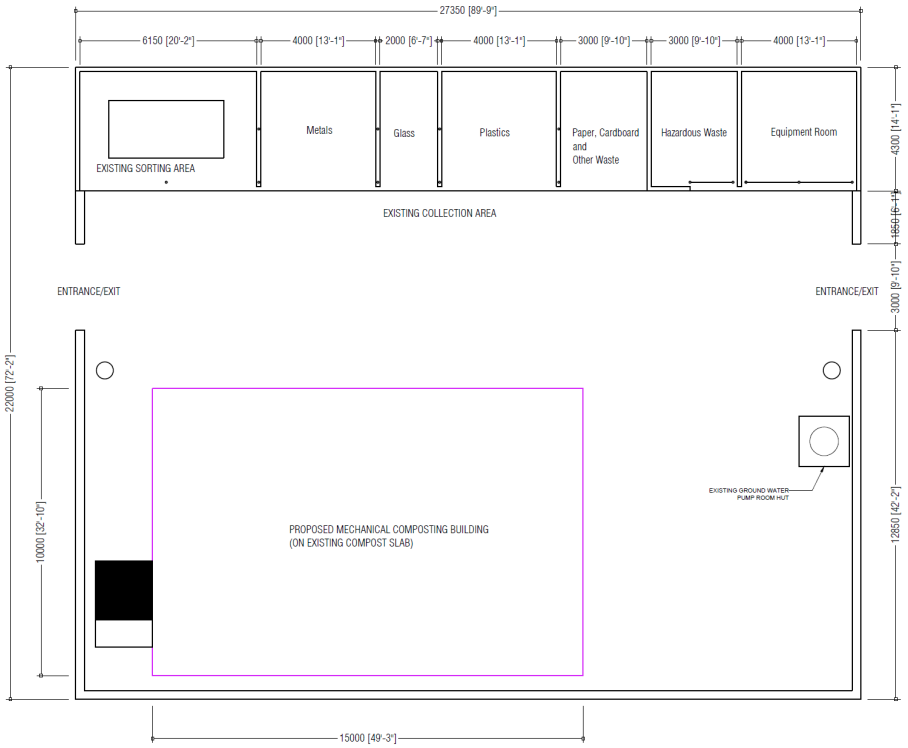


Figure 2. Site layout of the existing IWRMC showing the proposed mechanical composting building area (pink outline) (large scale drawing given in Appendix 3)

Figure 3. Images of the waste management site at present

The civil works of the proposed project is anticipated to be completed within 3 months. Table 1 gives a schedule for the work as provided by the proponent.

Table 1. Work schedule for the civil works related to the project

Activity	Month 1		Month 2		Month 3	
Mobilization of construction materials						
Civil works						
Construction of walls and roof						
Fixing of doors and windows						
Installation of water tap – internal pipping via the existing GW well						
Connecting electricity – installing sockets, lights and exhaust fan						
Installation of fire-safety equipment						
Demobilization						

3.1 Inputs

Workforce for the project is comprised of 1 site supervisor, 1 engineer and 8 laborers. The workforce will be accommodated through rental of houses and/or guesthouses. If travelling to the island during COVID 19 pandemic, workforce will abide by all quarantine and safety guidelines issued by HPA at the time.

Electricity, water and sewerage required for the workers will be arranged via the existing facilities available at the islands as the workforce will be accommodated in existing houses and/or guesthouses.

Electricity and non-potable water are available at the existing IWRMC, which the workers can use during working hours. Mineral water bottles or rainwater will be used for drinking purposes.

3.2 Construction methodology

The materials and machinery proposed to be used for the construction work are as given below:

- Construction materials:
  - Concrete
  - Cement
  - Sand
  - Flood lights
  - G.I. pipes

- Metal sliding doors
- Emulsion paint
- Lysaght Roofing Sheet
- 3 phase power sockets
- Ceiling fan
- Timber

- Machinery:
  - pickups or trucks (for land transport of construction material)
  - Concrete mixing machine
  - Concrete supply pump and pipe

Construction of the structure enclosing the compost slab will be carried out as per regular civil works methodology. Once constructed a water pump will be installed to connect water to the mechanical composting area from the groundwater well. Water will be piped to the area through internal pipeline. Water taps will be installed in the mechanical composting area. Power connections will be made from the existing power distribution board at the IWRMC.

3.2.1.1 **Design of Aerobic system (composting machine)**

Waste generation quantity for the island reported in previous EMP for development of IWRMC at the island is 452 kilograms (kg)/ day (Zuhair, 2018), which was mainly composed of green waste, metal and plastics. The proposed technology for composting is through use of an aerobic system, which involves in-vessel composting in the Organic Waste Converter (OWC) machine. The OWC can compost all types of organic waste including kitchen and food waste (both raw and cooked), green waste.

The organic waste is sorted and segregated and the chopped waste is added to the OWC machine, together with the Bioculum (a bacteria powder formulated with 5 different Bacillus species). The Bioculum improves the natural aerobic process. The Bioculum is added at the rate of 1-2g/kg of raw waste. If needed, an absorbent such as saw dust or shredded leaves can also be added at this stage to bring the mix to the desired moisture (40-45%).

The OWC unit is then operated for a period of 15 to 30 minutes, depending on size of unit and batch size. During this time the waste, Bioculum and absorbent are mixed to achieve a homogenous consistency.

At the end of the cycle, the raw compost is discharged into crates of 25kg capacity and these crates are then then placed in curing racks for a period of 10 to 12 days. The curing racks are equipped with an automatic fogging device that maintains moisture content at the correct level thereby ensuring curing is completed.

At the end of the curing period, the crates are emptied with the cured compost ready for use; however, after emptying the crate, leaving the cured compost for a further seven days enhances the composts maturity, providing a higher quality product. Typically, the cured compost amounts to approximately 25 – 35%, by weight, of the raw waste input. Flow diagram of the process is given in Figure 4.

The amount of waste that can be processed through the OWC each day is determined by the operating hours. This provides flexibility during times of unexpectedly high inputs or following unanticipated outages. It also allows increasing throughputs to be accommodated at minimal cost. The components of the system which require critical sizing is the curing system; however, additional racks and/or crates require only small areas of land and modest capital expenditure.

The compost generated through the project can be used for agricultural purposes on the island or even packed and sold, thus generating an income for the island.

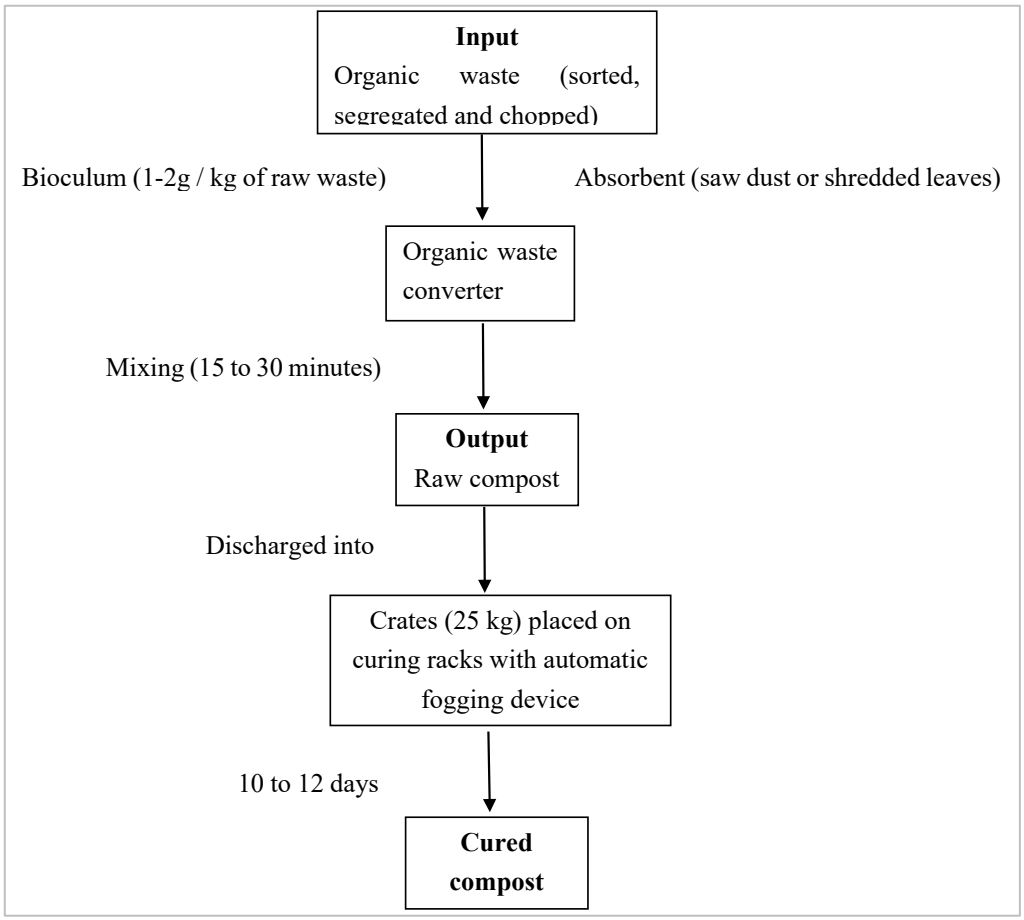


Figure 4. Flow diagram of the process of the OWC machine

4 Existing Site Condition

Rinbudhoo lies on the northwestern side of Dhaalu atoll, in the inner atoll waters, with a NW to SE orientation. Site visit to assess the condition of the existing waste management site was made on the 24^{h} of January 2021.

4.1 Existing IWRMC site

The existing IWRMC site is in good condition overall, although the fence is slightly damaged The centre and the roads around the centre are very clean and waste was sorted and kept in respective storage areas. Current waste management practice is to sort the waste at household level and bring to the centre. Non-biodegradable waste is stored in their respective areas (due to absence of machinery to shred / compact / crush the waste) while household kitchen waste and green waste is used to make compost. The plastics collected are disposed of through Parley once a month or so. Previously kitchen waste used to buried or thrown to sea. Opening burning is practiced, once every 2 days although for very minimal quantity of waste, since majority of materials which can be burnt are now being used for making compost (Figure 5).

Figure 5. Roads around the existing IWRMC, and small pile of waste being burnt outside the centre

Waste quantities as per segregation types are given in Table 2, where volume has been estimated based on the area occupied by the waste and the height of pile or based on volume of jumbo bags used to store the waste. Figure 6 shows segregated waste stored in the IWRMC. Main types of waste observed at the segregation areas were glass an, metal (scrap and cans). There was little to no plastics, at the site as the collected plastic had already been shipped out to Parley. Construction waste is not disposed at the IWRMC, but to the southern side of the island (Figure 7), more accurately at the shoreline between harbour and the project site.

Table 2. Waste quantities as per segregation categories present at the site

Type of waste	Estimated volume (m^3)
Scrap metal + cans	106
Glass	5

Figure 6. Segregated waste stored at different areas of the existing IWRMC

Figure 7. Areas of the island where construction and demolition waste have been disposed

The existing compost slab was in good condition and is being used for composting work. The existing groundwater well at the site was also in good condition, although there was some debris in the well. The well was kept inside an enclosure. Figure 8 shows the existing compost slab and groundwater well.

Figure 8. Existing compost slab (top) and groundwater well (bottom)

4.2 Natural and human threats and interventions

Rinbudhoo is an oval shape island of length 709m and 360m wide (widest area with new harbor development zone), located at north western side of Dhaalu Atoll. Seasonal littoral movement is observed on the eastern and western quadrant of the island, with dominant hydrodynamic regime effecting littoral movement are wind wave induced currents and refracted swell wave induced currents.

Severe erosion is observed on the southern side of the island, especially at the shoreline near the IWRMC. Erosion is due to natural conditions, although exacerbated by the harbour development work (Figure 9). Figures 10 and 11 show the level of erosion at the shoreline nearest to the existing IWRMC and erosion along the shoreline between the site and the harbour respectively. Some level of erosion is also observed on the northern side and north western end of the island.

In terms of human induced threats, no construction was ongoing within vicinity of the project site. The site and surroundings are well maintained and all the operations are carried out by the Women's Development Committee of the island.

Figure 9. Erosion prone areas of Dh. Rinbudhoo (red outline) (large scale map given in Appendix 4)

Figure 10. Beach at shoreline nearest to the IWRMC

Figure 11. Beach at shoreline between IWRMC site and harbour

5 Mitigation Plan

All development projects will inevitably have an impact on the environment, both negative and positive. There are a number of actions that can be taken to minimize or avoid impacts altogether. Mitigation measures are selected to reduce or minimise the severity of any predicted adverse environmental effect and improve the overall environmental performance and acceptability (lower environmental damage) of the project from the perspective of construction and operation. Impacts due to the project based on the assessment principles followed are foreseen as low to moderately negative and moderately positive.

Mitigation measures have been proposed for significant environmental impacts that are associated with the project, both during construction and operational phase. These are discussed with respect to various components and their likely impacts on physical, biological (within the project area), and social and economic environment (health, culture and economy) (Table 3). Translation of the proposed ESMP in Dhivehi is given in Appendix 5 of this report.

Table 3. Mitigation measures proposed for the project (ESMP matrix)

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
Construction phase	Impact on marine and terrestrial environment during handling and transport of construction materials	• Ensure all materials being transferred are packed properly with no loose materials • Monitor oil spills and maintain machinery	Contractor (implementation) Proponent (supervision)	N/A	N/A	
	Impact on environment due to improper storage	• Storage areas for construction materials should have an impermeable surface and should be covered • Materials should be stored in appropriate containers • Area should be regularly monitored for any leaks • Storage facility should be setup within project site to minmise vehicle movements	Contractor (implementation) Proponent (supervision)	N/A	N/A	
	Impact on flora, fauna and groundwater due to handling of construction related materials and equipment	• Ensure workforce are trained and supervised to handle materials during transfer, and unloading so as to minimize accidental spills, littering etc. • Ensure materials are properly packed and any oil/fuel is	Contractor (implementation) Proponent (supervision)	N/A	N/A	Pre-construction – site preparation phase

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		properly stored in containers used for that purpose				
	Sociocultural impact due to arrival of workforce	• Workforce should be sensitized to the social norms and acceptable behaviour of the Maldivian culture. • Workforce should be fully aware of the Do's and Don'ts of the Maldivian culture. • Establish the Grievance Redress Mechanism (GRM) given in this report	Contractor (implementation) Proponent (supervision)	Grievance Redress Mechanism given Section 9.4 to be enforced.	N/A	Council / MCEP PMU staff to be assigned as focal points hence no additional cost for implementation of GRM
	Noise pollution	• Operate machinery during day time hours (6am to 6pm)	Contractor (implementation) Proponent (supervision)	N/A	N/A	
	Air pollution / Dust	• Regularly maintain machinery so as to reduce emissions. • Provide workers with masks and other required gear • Regular watering of site to minimize dust (after work everyday)	Contractor (implementation) Proponent (supervision)	As per operational manual of machinery	N/A	Should be included in the construction contract
	Impact on groundwater table and groundwater quality	• Extract only quantity of water required for the civil works.	Contractor (implementation) Proponent (supervision)	N/A	N/A	
	Impact on health and safety of workforce	Operational Health and Safety measures	Contractor / Island Council (implementation) Proponent (supervision)	Contract to provide Health and Safety Plan	N/A	Should be included in the

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		• Ensure workers are well briefed on the health and safety measures to be followed during the project • Ensure work force are given all the appropriate safety equipment and gear required for the work (safety hats, boots, glasses, masks and gloves) • Display PPE requirement board at site which should the PPE required by the workers when carrying out different tasks of the construction work • Ensure set up of easy access toilets, wash basins at the site. either through rental from nearby area or installation of a portable toilet. • Provision of regular meal breaks and an onsite resting area for the workers, where they can rest during the breaks • Ensure provision of first aid kit on site ensure readily available transfer in instances of emergency use				construction contract

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		• Ensure workforce are accommodated in appropriate quarters where they are not cramped. • All staff handling hazardous waste should be given the proper protective gear (protective eye gear, protective gloves) COVID 19 related preventative measures • Ensure that there is set number of workers in each room so as to allow social distancing • Ensure that workforce follows all HPA guidelines at all times, with respect to COVID 19 pandemic. • Measures should be in place to undertake daily temperature checks of workforce and enable social distancing at the accommodation facilities and work site.				
	Impact on public health and safety	• Clearly demarcate project area with metal pipe fencing and roofing sheets • Ensure public does not have access to the project site and	Contractor (implementation) Island Council	N/A	N/A	Should be included in the project cost

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		appropriate signs are put up at the required areas • Establish Grievance Redress mechanism given in the report. Information displaying contact details of the focal points (Tier 1 and Tier 2) should be displayed on the project board, council notice board and via posters displayed in public areas. QR code for downloading the forms and information on GRM should be given in each of the media used.				
	Fire safety	• Ensure connections to power facility are established by trained and competent personnel • Ensure construction workforce are trained in firefighting so as to address any fire hazards promptly • A portable fire extinguisher should be used at the site.	Contractor (implementation) Island Council	Firefighting equipment should be included as part of equipment inventory of IWRMC	Should be included in the project cost	
	Waste Management During Construction Phase	• Construction waste produced should be reused for the construction of the IWRMC as much as possible. The remaining	Contractor / Island Council (implementation) Proponent (supervision)	N/A	N/A	Should be included in the project cost

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
	.	reusable materials such as (metal bars and roofing sheets) should be given to the island community or the island council free of cost. • Green waste to be sundried and left at the forest area for natural decomposition. • Any remaining construction waste shall be temporarily stored and taken out of the island to a RWMF at the time of demobilizing. • Hazardous waste generated should be collected and stored in sealed containers • Area where hazardous waste is stored should have an impermeable surface (such as concrete layer, metal sheet) and should be clearly marked with warning signs				

Operational phase	Impacts due to waste spillage during transfer of waste from households to the centre	• Identify correct way in which waste should be left for collection (properly closed bags with no leakage) • Ensure transport vessel carrying the waste carries only a set load • Vessels should be enclosed on all sides to prevent spills • Setup of appropriate bins at identified locations • Provision of proper and complete training to IWRMC operators (in all aspects of operations) • Provision of all required PPE to the staff of IWRMC • Protective clothing, gloves, respiratory face masks and slip-resistant shoes are recommended for waste transport workers and hard-soled safety shoes for all workers to avoid puncture wounds to the feet. • Noise protection gear such as ear muffs should be provided to all workers operating or working within vicinity of loud equipment • Provision of hard hats for workers operating or working within vicinity of heavy mobile equipment, and at the discharge	Waste Facility Operator Island Council	Operational plan should be prepared and IWRMC should be registered and licensed by EPA as per Waste Management Regulation.	Should be included in the project cost PPE to be included in project cost	

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		location for collection trucks, include provision of hard hats				
	Impacts due to machine malfunction	• Provision of proper and complete training to IWRMC operators (in all aspects of operations and machine maintenance) • Undertake routine maintenance of machinery as per the manual • 1 year stock of bioculum and other spare parts that might be required for the routine functioning of the OWC machine should always be maintained.	Waste Facility Operator Island Council	N/A	N/A	Should be included in project cost
	Impact on groundwater resource due to leachate and wastewater processing	• Ensure drains are cleaned regularly to prevent clogs • Organic waste brought to the IWRMC must be prepared for composting / composted on a regular schedule	Waste Facility Operator Island Council	Associated with operation	N/A	
	Litter, odour and vectors	• Sort waste brought to IWRMC and compost organic waste regularly. • Store inorganic waste and other bulk waste in their allocated storage areas	Waste Facility Operator Island Council	N/A	N/A	

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		• Undertake volume reduction via glass crushing, metal can baling, plastic shredding, wood chipping etc. • Arrange regular disposal of inorganic waste through transportation to the RWMF				
	Socio-cultural conflicts	• Hiring of locals (especially from within the island community) to operate and manage the IWRMC and implement the Island Waste Management Plan • Establish the Grievance Redress Mechanism given in this report. Information displaying contact details of the focal points (Tier 1 and Tier 2) should be displayed on the project board, council notice board and via posters displayed in public areas. QR code for downloading the forms and information on GRM should be given in each of the media used.	Waste Facility Operator Island Council	Costs associated with the contract	Not known	Should be included in project cost
	Workplace safety	• Set up of all required sign boards as per the Waste Management regulation	Waste Facility Operator Island Council	Fire safety equipment to be supplied and installed as part of the contract:		

Phase	Potential Environmental impacts	Proposed mitigation measures	Institutional responsibility (implementation and supervision)	Estimated quantities required and material specifications recommended	Cost estimates	Comments
		• Ensure all firefighting equipment required for the facility are in place and in good condition		• 50KG DCP Trolley (2) • 50LTR Foam Trolley (1) • Wet Chemical 6Ltr with Cabinet for hazardous waste area (1) • Water 9Ltr with Cabinet for Office Area – Outside (1) • CO2 2KG with Cabinet for Office Area – Outside (1)		
	Impact on resources	• Prepare a plan to switch on the compactors and shredders depending on the incoming waste stream to conserve electricity. • Ensure that all equipment is serviced and kept clean daily, to reduce the amount of water required for cleaning. • Work shall be planned to be carried out during day times. • Use solar lights in the premises.	Waste Facility Operator Island Council	N/A	N/A	Should be included in project cost

5.1 Grievance Redress Mechanism (GRM)

The Maldives Clean Environment Project has formulated a Grievance Redress Mechanism (GRM) for these projects, which would facilitate the receiving and addressing of any grievances which may arise during both the construction and operational phase of the project. The mechanism has two tiers, whereby Tier 1 will be facilitated by he Island Council and Tier 2 by the MCEP.

The Island Council were briefed about the mechanism during the stakeholder consultation meeting held with them regarding the project and operations of the IWRMC. The Council have also been requested to identify a focal point for managing the GRM at Tier 1. Details of focal point identified by the Council are:

- Name: Mohamed Shareef
  - Designation: Assistant Municipal Officer
  - Contact No. 7503097, 6760047

Tier 2 will be managed by the MCEP, with the Environmental and Social Safeguards Specialist as the focal point.

Table 4 below gives the details of the GRM formulated by MCEP.

Table 4. Grievance Redress Mechanism for the project, formulated by the PMU

Tiers of Grievance Mechanism	Nodal Person for Contact	Contact Communication and other facilitation by the project	Timeframe to address grievance
First Tier: Island Council	Island Council will be the first point of contact for any grievances. The staff designated as the waste management focal point by the island council will manage grievances on behalf of the council.	GRM should be publicly displayed in the construction site as well as the council office. GRM should also be outlined in official website and/or social media pages of Council, ME (and/or the project), including contact details of the nodal person in each tier. Grievances can be addressed informally by contacting the council through email / telephone / in person. If the grievance cannot be resolved informally, an aggrieved party must submit a complaint on the Tier I Complaint Form. A copy of the form (with the council seal) should be provided to the aggrieved party as evidence of receipt. Electronic version of the complaint form should be available from the websites and/or social media pages	15 working days

		of ME and the council. Physical copies of the form should be available from the council front office. Council will provide assistance to fill the form for those who cannot write. The council should keep separate registries for informal and formal complaints and maintain records of all complaints received. The council will discuss the matter with all relevant stakeholders (Farmers, Fishermen, School, Health Center, Women's Development Committee etc.), where deemed necessary and attain views of them. If such meetings are arranged, the date, time, location or venue, list of participants (with contact details) and a summary of the main outcome of the consultation must be annexed to the written decision issued by the council. If the complaint is resolved within 15 working days, the council must communicate the decision to the aggrieved party in writing. The aggrieved party must acknowledge the receipt of decision and submit their agreement or disagreement with the decision within 10 working days. If no acknowledgement is submitted from the aggrieved party within this period, then the decision will be considered as accepted. If a complaint requires more time to address, this requirement must be communicated to the aggrieved party in writing and the aggrieved party must consent and sign-off the request for the extension to take effect. An extension can be made to an additional 15 working days.	

		The staff designated as the waste management focal point by the island council will manage and provide feedback for grievances submitted to the council.	
Second Tier: Ministry of Environment (ME)	Environmental and Social Safeguards officer at the Project Management Unit (PMU)	If the grievance cannot be resolved through Tier 1 to the satisfaction of the aggrieved party or if the issue is outside the jurisdiction of the council (issues related to RWMF), an aggrieved party may submit a complaint on the Tier 2 Complaint Form. A copy of the form (with ME seal) should be provided to the aggrieved party as evidence of receipt. Electronic version of the complaint form should be available from the websites and/or social media pages of ME and the council. Physical copies of the form should be available from the council and ME front office. A copy of the Tier 1 Complaint Form should be submitted with the Tier 2 Complaint Form. ME will forward the grievance to PMU. PMU screens the grievance and determine if its related to MCEP. If it is unrelated, the aggrieved party must be notified in writing and the way forward must be outlined to them including the necessary government institutions to follow up. Environment and Social Safeguards Officer at the PMU will be the contact person in processing a grievance through the Second Tier. PMU will discuss the matter with EPA and other relevant institutions, where deemed necessary and attains views of them. PMU will also	15 working days

		arrange site visits and hold onsite discussions and meetings if necessary. The PMU will be responsible to ensure that there is no cost imposed on the aggrieved person, due to the grievance mechanism at the second tier. If the complaint is resolved within 15 working days, the PMU must communicate the decision to the aggrieved party in writing. The aggrieved party must acknowledge the receipt of decision and submit their agreement or disagreement with the decision within 10 working days. If no acknowledgement is submitted from the aggrieved party, then the decision will be considered as accepted. If a complaint requires more time to address, this requirement must be communicated to the aggrieved party in writing and the aggrieved party must consent and sign-off the request for the extension to take effect. An extension can be made to an additional 15 working days. If the grievance is not resolved to the satisfaction of the aggrieved party within 15 working days of submission of the grievance to tier 2 then the aggrieved party may notify the ME, in writing, of the intention to move to tier 3.	
Third Tier: Judiciary Power / Assistance to Vulnerable Persons beyond the Project's Grievance Redress Mechanism	Judiciary system is an option for an aggrieved person and/or community in case that the other tiers have not been effective	The legal system is accessible to all aggrieved persons. Assistance from the PMU of MCEP is available only for vulnerable person(s)* as per this grievance mechanism. In cases where vulnerable person(s) are unable to access the legal system, the Attorney General´s office will provide legal support to the vulnerable person(s). The PMU	As per established Judicial Procedure

		must assist the vulnerable person(s) in getting this support from Attorney General´s Office. PMU must also ensure that there is no cost imposed on the aggrieved person if the person belongs to the vulnerable groups. The list of vulnerable groups is as defined in the footnote but may be further defined by MEE. The verdict of the Courts will be final.	

*Vulnerable person(s): A vulnerable person(s) for the purpose of this project is a person who is poor, physically or mentally disabled/handicapped, destitute, disadvantaged for ethnic or social reasons, an orphan, a widow, a person above sixty years of age, or a woman heading a household.

6 Stakeholder consultation - Island Council

Consultation with the Island Council was held via Google meet on the 21st of January 2021. Details of participants of the meeting are given in Table 5.

Table 5. Details of participants of consultation meeting with Island Council

Office	Name	Designation	Contact details
Dh. Rinbudhoo Island Council	Ahmed Niyaz Nizar	Vice President – Council	7557955
	Yoosuf Nafiz	Council Member	7922907
LaMer Group Pvt Ltd	Ismail Abid	Managing Director	7765077
	Shahaama A. Sattar	Environmental Consultant	7904985

Consultation meeting with the Island Council commenced with the EIA Consultant giving a description of the proposed project and the operations of the composting machine. Council informed that they had been informed about the project, though not about the details of the composting machine. The consultant then enquired about the current waste management system and thoughts of the council with respect to the proposed project. Points discussed are given below (feedback in italics):

- EIA Consultant: how is waste management carried out at present and is there an Island Waste Management Plan?
  - *A waste management plan for the island has been formulated, though it has not been published in the gazette as yet. Under the plan, the Council will carry out waste collection services from the household for a fee, though initial 2 months will be implemented without a fee, as they would like to assess whether the community are willing to pay for the service*
  - *At present waste management work is fully implemented by the Womens' Development Committee, who manage the disposal site and are also responsible for cleaning of public areas. Waste is segregated into biodegradable, plastics, cans and glass at household level and brought to the disposal site at allocated times, when waste collection is undertaken at the site. Burning and disposal of ashes is also undertaken at certain times as per a schedule. Burning of waste is being carried out next to the existing IWRMC. Cans and glass are being stored at the IWRMC and the Council has on a few occasions disposed of these to Thilafushi themselves, though this is not feasible due to the high cost. Not being able to dispose of these is a cause of great difficulty. Additionally, absence of a glass crusher or compacting machine means that a large number of bags have to used for the work. Plastics are at present being disposed through Parley.*
  - *The existing IWRMC has been in place for almost 3 years, though due to the absence of equipment and training they have not been able to make full use of the site. The existing site has all required power and water connections. The island does not have a*

sewerage network at present. The power facility of the island has … gensets of 160kW with a synchronized panel. Hence it would be able to cater to additional load.

- *Dustbins have also been set up around the island for a number of years, so as to prevent littering and ensure proper disposal of waste.*

- EIA Consultant: is there capacity within the staff to operate the machinery as proposed?
  - *Operations can be carried out with training on the use of the machinery. The Council would like to carry out this work with the involvement of women (as at present), though if required additional staff (men) can also be employed.*

- EIA Consultant: the Ministry has formulated a Grievance Redress Mechanism which identifies ways to handle any complaints which may arise during the construction/operation phase of the project. EIA Consultant briefly explained the mechanism and requested council to identify a focal point for the project.

- EIA Consultant enquired whether the Council had any additional questions or issues
  - *Council enquired whether the other machinery required for waste management (plastic shredder, compactor, glass crusher) will be installed. Waste management cannot properly implemented without these machines, as the collected waste is stored at the centre. This takes up large amount of space, which would greatly be reduced through use of these machines. The island of Rinbudhoo is quite invested in the guesthouse market and hence prior to COVID 19 pandemic had a number of tourists always visiting the island. Furthermore, the island is surrounded by tourist resorts who visit the island on a regular basis. Hence waste management is crucial to the community, both for environmental and economical reasons. The council would thus like to stress the importance of having a properly set up IWRMC so as to ensure the work is being carried out as it should be carried out.*

6.1 **Consultations Plan**

The brief plan below provides a guidance on how consultations can be carried out during the construction and operation of the proposed project to ensure the concerns and feedback from the council are addressed throughout the project. Consultation meetings can be carried out at each phase of the project.

Table 6 Consultation Plan for council

Project Phase	**Discussion Points**	**No. of meetings**
Mobilization	Discuss the workplan and support required from the council/proponent	1
Construction phase	Discuss the progress, concerns and feedbacks	2
	Discuss about how the training of staff to operate the machinery will be carried out	1
Operation and Maintenance	Meeting to handover the operation to island council	1

In addition to the above meetings, meetings shall be arranged on request if need be from both sides; the council and the proponent to ensure the whole process is carried out in a participatory manner.

7 Monitoring Program

Monitoring is the systematic collection of information over a long period of time. It involves the measuring and recording of environmental variables associated with the development impacts. Monitoring is needed to:-

- Compare predicted and actual impacts;
- Test the efficiency of mitigation measures;
- Obtain information about responses of receptors to impacts;
- Enforce conditions and standards associated with approvals;
- Prevent environmental problems resulting from inaccurate predictions;
- Minimize errors in future assessments and impact predictions;
- Make future assessments more efficient;
- Provide ongoing management information; and
- Improve EIA and monitoring process.

Impact and mitigation monitoring are carried out to compare predicted and actual impacts occurring from project activities to determine the efficiency of mitigation measures. This type of monitoring is targeted at assessing human impacts on the natural environment. Impact monitoring is supported by an expectation that at some level anthropogenic impacts become unacceptable and action will be taken to either prevent further impacts or re-mediate affected systems.

Table 6 shows the monitoring work to be carried out for the construction and operational phase of the project. Commitment to carrying out and financing the mitigation and monitoring work is given in the proponent's declaration at the beginning of the report.

Table 7. Monitoring programme for the different phases of the project

Proposed mitigation measure	Parameters to be monitored	Location	Measurements	Frequency of monitoring	Responsibility	Cost (MRf)
Pre-construction phase						
Monitor oil spills	Spill events	Sea/land	Logs of spill events	After every event	Contractor	N/A
Construction phase						
Workforce health and safety	Daily temperature checks General health and wellbeing of workforce	Project site	Logs of any illness amongst workforce	Daily	Contractor	Part of the contract
Operational phase						
Monitor spills during the waste collection and disposal process	Spill assessments during collection, transfer, with IWMRC and transfer to RWMF Littering around the island	IWRMC site and transport route Around the island	Logs of spills and type Logs of littering incidents (date, location and type of waste)	Spill logs after every incident Littering monitoring every 3 months	IWRMC operator / Island Council	Part of operational cost
Monitor IWRMC operations	Waste generated and disposed quantities	IWRMC	Daily logs of waste generated Composting logs with details of input/output quantities Logs of disposal of inorganic waste	Daily / for every incidence of disposal of inorganic waste	IWRMC operator / Island Council	Part of operational cost
Grievance redress mechanism	Monitor grievances by the community or other personnel	Whole island	Log of grievances filed and how these were handled	Continuous process	Island Council / MCEP	Included in operational cost

7.1 Reporting Procedures and Implementation Schedule

The reporting procedures and schedule is for the various monitoring components are given in Table 7 below.

Table 8. Monitoring report submission schedule

Phase	Deliverables	Responsibility	Accountability
Construction phase	Monitoring report submitted every 3 months (as per format provide by MCEP Safeguards Specialist) which should include the following: • Log of spill events during material transfer	Contractor	MCEP
Operational phase	Monitoring report submitted once a year (as per format provide by MCEP Safeguards Specialist) which should include the following: • Logs of spill / littering assessments • Waste quantification logs • Compost quantification logs • Outcomes of grievances filed	IWMRC Operator / Island Council	MCEP

8 Conclusion

This report gives the findings of the assessment for the formulation of an Environmental and Social Code of Practice for projects involving minimal civil works, for the proposed project by the Ministry of Environment through the Maldives Clean Environment Project to pilot in-vessel composting in Rinbudhoo, Dhaalu Atoll. The findings of the assessment shows that overall, the project has low negative impacts on the environment.

The proposed method of composting, which will be done in the machine itself is predicted to have minimal negative impacts as it greatly overcomes the issues faced by other methods of composting such as windrow-composting. The method has several benefits, some of which that have been reported are:

- Simple and convenient to operate without the need for constant attention;
- Short processing times ensures economic in use with low energy consumption;
- Requires minimal maintenance;
- Beneficial to the environment;
- Overcomes the problems of odour, leachate generation and ground water contamination associated with traditional methods of waste disposal

All development projects will inevitably have an impact on the environment, both negative and positive. Mitigation measures are selected to reduce or minimise the severity of any predicted adverse environmental effect and improve the overall environmental performance and acceptability of the project. Mitigation measures have been proposed for significant environmental impacts that are associated with the project, both during construction and operational phase and these have been given in the ESMP given in the report. Some measures include:

- Provision of adequate training in proper method of handling of machinery and materials during both construction and operational phase
- Provision of adequate training in proper method of handling of waste during collection and disposal during operational phase
- Provision of all protective gear to workers during both construction and operations
- Implementation of the Grievance Redress Mechanism which has been formulated by the proponent, both during construction and operations

Monitoring programme identified in the report will enable the proponent to assess whether the mitigation measures which have been identified in the report are effective. Early identification of negative impacts will enable the proponent to rectify the course of activities.

In order to further minimise and manage environmental and social impact associated with the project the following are recommended:

1. Adherence to all relevant legislations, regulations, guidelines and standards during construction and operation phase;
2. Establish environmental and occupational health and safety procedures for all relevant components;
3. Installation of renewable energy sources at IWRMC, such as solar panels to source power for operations;
4. Carryout regular consultations with the island council during construction and operation stage of the project.
5. Carryout awareness raising campaigns to increase awareness of the general public regarding proposed work
6. Ensure adequate training is given to IWRMC staff in operations and maintenance of the new compost machine so as to ensure proper implementation of the project at all phases.
7. Encourage continued participation of women, especially during operational stage
8. Ensure proper supervision and inspection of the IWRMC at regular intervals
9. Carry out some form of coastal protection work at shoreline near project site to prevent further erosion

In the context of the above conclusions and recommendations, with due consideration to the environmental components identified above and the extent of the project activities and their likely and predicted impacts identified, with proposed mitigation measures and monitoring followed, it is concluded that the project is feasible and justified. Furthermore, the positive benefits due to the project, both to the environment and island community overweigh the negative effects on the environment during the project.

Acknowledgements

The consultant acknowledges the contribution provided by the team members in this report for the valuable contribution to the report and especially at the field. The consultant also acknowledges the assistance provided by the PMU of MCEP. Appreciation also to the Island Council of Rinbudhoo, especially the Council Vice President, Mr. Ahmed Niyaz who is also the appointed focal point for the project, for their continuous assistance during the project report formulation and survey work.

CVs of team members are given below.

Curriculum Vitae

Position	Environmental Consultant
Name	Shahaama Abdul Sattar
Address	G. Helengeli, Lily Magu Male', Rep. of Maldives
Contact	Mobile: +9607904985 Email: shahaama.abdulsattar@lamer.com.mv shahaama.sattar@gmail.com
Date of Birth	30 September 1980
Nationality	Maldivian

Education	**Master of Science (MSc)** in Fisheries Biology and Fisheries Management, University of Bergen. Bergen, Norway, 2004 - 2006 **Bachelor of Science (BSc.),** The Flinders University of South Australia, Adelaide, South Australia, 1999 - 2001
Membership of Professional Associations	Small Island Research Group (SIRG) Maldives, Vice President
Countries of Work Experience	Maldives
Languages	**Dhivehi** Mother tongue **English** Fluent

Employment Record

From: 2008 - 2011
Employer: Marine Research Centre, Ministry of Fisheries and Agriculture, Male', Maldives.
Position: Fisheries Biologist

From: 2006 to 2008
Employer: Marine Research Centre, Ministry of Fisheries Agriculture and Marine Resources, Male', Maldives.
Position: Senior Research Officer

From: 2002 – 2004
Employer: Marine Research Centre, Ministry of Fisheries Agriculture and Marine Resources, Male', Maldives.
Position: Research Officer

Line of work at MRC included:
Assessment of the reef and grouper fisheries of Maldives, with surveys to monitor fisheries and fish species behavior. Compilation and analysis of data, for regular reviews and reporting and formation of management recommendations. Key role in the formulation of the Grouper Fisheries Management Plan / Grouper Fisheries and Export Regulation

Focal point for the IUCN funded project on identification of reef fish spawning aggregations in the Maldives through fishermen interviews (2007)

Secretariat and key organizer – Indian Ocean Cetacean Symposium 2009

Project Partner for Maldives for the Darwin Initiative Coral Reef Fish Project, Maldives

MRC Focal Point for the Atoll Ecosystem Conservation Programme, Ministry of Housing and Environment (2009 – 2011)

Participated in the Biodiversity Valuation survey of Baa Atoll Maldives carried out by AEC project and IUCN

From: May 2011 – Dec 2012
Employer: Darwin Reef Fish Project / Marine Research Centre (Maldives) and Marine Conservation Society (UK)
Position: Consultant, Darwin Reef Fish Project (4 year joint collaboration between MRC and MCS, UK)
Assess the various reef fisheries (grouper, aquarium and food fisheries) of the Maldives and aims to establish management plans for these fisheries. Provision of technical support and assistance to the project staff and MRC in implementing the project and formulation of the management plans.

From: July 2011 – Dec 2011
Employer: Bay of Bengal Large Marine Ecosystem Project
Position: BOBLME Sharks Working Group Coordinator
Coordinator for the Sharks WG of BOBLME project, and work with the focal points in the member countries, to assist in the formulation and implementation of their National Plans of Action for Sharks.

From: June 2011 to Present
Employer: Land and Marine Environmental Resource Group Pvt Ltd
Position: Environmental Consultant

Workshops/Seminars Participated

15-21 March 2003 - Training Workshop on the Implementation of Multilateral Agreements in the Conservation of Biodiversity with special focus on Marine Biodiversity. Kushiro, Japan

14-16 November 2006 – Sixth William R. and Lenore Mote International Symposium – Life history in Fisheries Ecology and Management. Sarasota, Florida

03-05 March 2008 – Olhugiri and Dhigalihaa Protected Areas Management Planning Workshop. Eydhafushi, Maldives

11 March 2008 – Applying the Ecosystem Approach to managing Atoll Ecosystems in the Maldives. Hulhule Island Hotel, Maldives

24-26 March 2008 – Regional Consultation on Preparation of Management Plans for Shark Fisheries. Beruwela, Sri Lanka

17-19 June 2008 – Workshop on Assessment and Management of the Offshore Resources of

South and Southeast Asia. Bangkok, Thailand
22-23 March 2009 – BOBP-IGO National Workshop on Monitoring, Control and Surveillance in Marine Fisheries. Male', Maldives

18 – 20 July 2009 – Indian Ocean Cetacean Symposium 2009. Paradise Island Resort and Spa, Maldives.

09-11 August 2009 – Second Regional Consultation on Preparation of Management Plans for Shark Fisheries. Kulhudhuffushi, Maldives

24-25 February 2010 – BOBLME Project – National Inception Workshop, Male', Maldives

2-3 June 2010 – BOBP-IGO Technical Advisory Committee – 5th Meeting, Male', Maldives

13-14 September 2010 – BOBLME Fisheries Assessment Working Group – 1st Meeting, Bangkok, Thailand

14-16 December 2010 – EWS-WWF 2nd Marine Conservation Forum for the Gulf Region In partnership with the Pew Environment Group – Local Actions for Global Challenges, Abu Dhabi, United Arab Emirates

18-19 January 2011 – Bay of Bengal Large Marine Ecosystem Project – Workshop on the Status of Marine Managed Areas in the Bay of Bengal, Penang, Malaysia

5-7 July 2011 –Bay of Bengal Large Marine Ecosystem Project – First meeting of the BOBLME Sharks Working Group, Male', Maldives

7-8 September 2011 – Workshop to formulate the Grouper Fisheries Management Plan, DRFP/MRC, Male', Maldives

15-17 September 2011 – SEAFDEC Special Meeting on Sharks Information Collection in Southeast Asia, Bangkok, Thailand

10 April 2014 - Stakeholder Consultation to present the National Plan of Action on the Conservation and Management of Sharks (NPOA-Sharks), Male', Maldives

Publications

Sattar, S. A., Najeeb, A., Islam, F., Afzal, M. S. and Wood, E. (2012) Management of the grouper fishery of the Maldives, *Proceedings of the 12th International Coral Reef Symposium, Cairns, Australia, 9-13 July 2012, Session 13E* (in press)

Ushan, M., Wood, E., Saleem, M. and Sattar, S. A (2012) Maldives Sharkwatch Report for 2009 - 2010, *Proceedings of the 12th International Coral Reef Symposium, Cairns, Australia, 9-13 July 2012, Session 13D* (in press)

Sattar, S. A., Andréfouët, S., Ahsan, M., Adam, M. S., Anderson, C. R. and Scott, L (2012) Status of the Coral Reef Fishery in an Atoll under tourism development: the case of Central Maldives, *Atoll Research Bulletin 590*: 163-186

Sattar, S. A., Amir, H. and Adam, M. S. (2012) Reef fish tagging programme – Baa Atoll Pilot project, *Atoll Research Bulletin 590*: 187-200

BOBLME (2011) Report of the BOBLME Sharks Working Group, 5-7 July 2011, Male' Maldives,

Prepared for the Bay of Bengal Large Marine Ecosystem Project by Sattar, S. A. and Anderson, R. C.
Saleem, M., Sattar, S. A. (2009) Study on post-tsunami restoration and conservation projects in Maldives, *Prepared for the International Union for Conservation of Nature*.

Tamelander, J., Sattar, S., Campbell, S., Hoon, V., Arthur, R., Patterson E. J.K., Satapoomin, U., Chandi, M., Rajasuriya, A. and Samoilys, M. (2009) Reef fish spawning aggregation in the Bay of Bengal: Awareness and Occurrence, *Proceedings of the 11th International Coral Reef Symposium, Ft. Lauderdale, Florida, 7-11 July 2008,* Session 22

Sattar, S. A., Jørgensen, C., Fiksen, Ø. (2008) Fisheries Induced Evolution of Energy and Sex Allocation. *Bulletin of Marine Science*, 83(1): 235-250

Sattar, S. A. (2008) Review of the Reef fishery of the Maldives, Marine Research Centre, Male', Maldives. 62 pp

Sattar, S. A. and M. S. Adam (2005) Review of the Grouper fishery of the Maldives with additional notes on the Faafu Atoll fishery. Marine Research Centre, Male', Maldives. 54 pp

Environmental Impact Assessments Reports and other studies

The following are a selected list of the projects I have been involved in as an environmental consultant at LaMer Group Pvt Ltd.

Name of assignment or project	EIA for development of domestic airport facility at Funadhoo, Shaviyani Atoll
Year	2018
Location	Funadhoo, Shaviyani Atoll, Maldives
Client	Regional Airports, Ministry of Tourism
Project features	Development of domestic airport facility at Funadhoo
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA for agricultural development project at Hulhidhoo, Vaavu Atoll
Year	2017
Location	Hulhidhoo, Vaavu Atoll, Maldives
Client	Aarah Investments Pvt Ltd
Project features	Development of Hulhidhoo as a mix-use island with an agricultural (hydroponics) and tourism component
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA for development of 100 bed hospital at Addu City
Year	2017
Location	Addu City, Maldives
Client	Ministry of Housing and Infrastructure
Project features	Redevelopment of Equatorial Convention Centre as a 100 bed tertiary level hospital
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA for relocation of sewer outfalls at IGMH and Westpark area, Male' City
Year	2017
Location	Male', Maldives
Client	MWSC Pvt Ltd
Project features	Relocation of sewer outfalls at IGMH and Westpark area to industrial village area of Male'
Positions held	EIA team member

Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA for resort development at Islands I and E of Emboodhoofalhu Finolhu Development project
Year	2017
Location	Emboodhoofalhu Finolhu, Maldives
Client	Dream Islands Development Project
Project features	Development of reclaimed islands I and E of Emboodhoofalhu Finolhu as tourist resorts
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	Environmental Impact Assessment Report for aquatic animal quarantine facility at Hulhumale'
Year	2016
Location	Hulhule, Maldives
Client	Ministry of Fisheries and Agriculture
Project features	Setting up an animal quarantine facility within plant quarantine service area in Hulhule
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	Environmental Impact Assessment report for relocation of Male' Submarine cable landing
Year	2016
Location	Male', Maldives
Client	Dhiraagu
Project features	EIA related to relocation of the submarine cable from existing location to a new location
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	Socioeconomic Situation analysis of selected fishing communities as part of formulation of Master Plan for Sustainable Fisheries (MASPLAN)
Year	2015
Location	ADh. Mahibadhoo, F. Bilehdhoo, GA. Villingili, HA. Ihavandhoo, L. Gan, L. Maamendhoo, Lh. Naifaru, S. Maradhoo, Maldives, Maldives
Client	Ministry of Fisheries and Agriculture
Project features	Socioeconomic survey of selected islands, to undertake a situational analysis of the island communities
Positions held	Fisheries Management Consultant
Responsibilities	Carryout socioeconomic surveys in forms of group discussions and household surveys. Data collection and analysis and report formulation (trip reports and overall situational analysis).
Name of assignment or project	Development of Training material for project staff on mainstreaming and increasing awareness on climate change adaptation and mitigation measures in tourism operation
Year	2015
Location	Male', Maldives
Client	Ministry of Tourism
Project features	Mainstreaming and increasing awareness on climate change adaptation and mitigation measures in tourism operation
Positions held	Team member
Responsibilities	Material development and presentation
Name of assignment or project	Development of water supply and a sewerage system at Fuvahmulah
Year	2015
Location	Fuvahmulah, Gnaviyani atoll. Maldives
Client	Ministry of Environment and Energy
Project features	Setting up a water supply and a sewerage facility
Positions held	EIA team member

Responsibilities	Preparation of the EIA report
Name of assignment or project	Environmental Impact Assessment for soft coastal protection works at GDh. Thinadhoo
Year	2014
Location	GDh. Thinadhoo, Maldives
Client	Ministry of Environment and Energy
Project features	Beach Nourishment and Coastal protection
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	Beach Nourishment and Coastal Protection works at a private land at Praslin, Seychelles
Year	2014
Location	Praslin, Seychelles
Client	Ahmed Didi
Project features	Beach Nourishment and Coastal protection at Praslin, Seychelles
Positions held	Environmental assessment team member
Responsibilities	Preparation of the report submitted to the client
Name of assignment or project	1500 Housing Unit construction Project Maldives
Year	2014
Location	Fuvahmulah, Gadhdhoo, Hoadedhdhoo, Hithadhoo, Holhudhoo, Madaveli, Thinadhoo, Maldives
Client	Ministry of Housing and Infrastructure
Project features	Construction of Housing Units at the specified Islands
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Coastal modification at Robinson Club Maldives
Year	2013
Location	Ga. Funamaudua, Maldives
Client	Robinson Club Maldives, Maldives
Project features	Coastal modification at the NW side of the island, construction of geo-bag revetment and harbor basin maintenance dredging works
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for construction of gravity type waste water collection system at ADh Omadhoo
Year	2013
Location	ADh Omadhoo, Maldives
Client	ADh Omadhoo Island Council Office
Project features	Construction of gravity type waste water collection system and sea outfall pumping system
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for upgrading of Maldive Gas Pvt Ltd Gas jetty
Year	2013
Location	Thilafushi, Maldives
Client	Maldive Gas Pvt Ltd
Project features	Reconstruction of existing gas jetty head and expansion of jetty head
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Resort development at GDh Havvodaa
Year	2013
Location	GDh Havvodaa, Maldives
Client	Crystal Plaza Pvt Ltd, Maldives
Project features	Construction of a resort hotel and all the related amenities
Positions held	EIA team member
Responsibilities	Preparation of the EIA report

Name of assignment or project	EIA report for Coastal protection, coastal modification, beach nourishment, coral nursery setup and entrance channel maintenance dredging work
Year	2013
Location	Gili Lankanfushi, Maldives
Client	Gili Lankanfushi, Maldives
Project features	Coastal protection, coastal modification, beach nourishment, coral nursery setup and entrance channel maintenance dredging work
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Harbor development project at Dh. Maaenboodhoo
Year	2013
Location	Dh. Maaenboodhoo, Maldives
Client	Ministry of Housing and Infrastructure
Project features	Development of harbor facility (dredging of harbor basin, construction of wharfs and breakwater)
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Flood mitigation and reclamation work at Faresmaathoda
Year	2013
Location	GDh. Faresmaathodaa, Maldives
Client	United Nations Office for Project Services (UNOPS)
Project features	Construction of breakwater and reclamation of land
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Development of Domestic Airport Facility
Year	2012
Location	Th. Thimarafushi, Maldives
Client	Maldives Airports Company Limited
Project features	Construction of runway apron
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Wharf reconstruction and upgrading of existing berthing facility and slipway
Year	2012
Location	Thilafushi, Maldives
Client	Fuel Supply Maldives Pvt Ltd, Maldives
Project features	Reconstruction of wharf and upgrading of existing berthing facility and slipway
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Resort development at B. Kanifinolhu
Year	2012
Location	B. Kanifushi, Maldives
Client	Coastline Hotels and Resorts Pvt Ltd, Maldives
Project features	Construction of a resort hotel and all the related amenities
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for Borehole construction at Cyprea Mrine Food Fish Factory
Year	2012
Location	K. Himmafushi, Maldives
Client	Cyprea Marine Food Pvt Ltd, Maldives
Project features	Construction of a 8 inch borehole at factory premise
Positions held	EIA team member
Responsibilities	Preparation of the EIA report

Name of assignment or project	EIA report for resort development at K. Kudavilligili, Maldives
Year	2011
Location	K. Kudavilingili, Maldives
Client	Yacht Tours Pvt Ltd, Maldives
Project features	Construction of resort hotels and all the related amenities. In addition a large reclamation of the shoreline as additional land as part of the resort development is also part of the project
Positions held	EIA team member
Responsibilities	Preparation of the EIA report
Name of assignment or project	EIA report for development of city hotel, hospitality institute and resort development at Gasfinolhu and Bodufinolhu, L. Atoll
Year	2011
Location	L. Gan, Bodufinolhu and Gasfinolhu, Maldives
Client	Premier Equities Pvt Ltd, Maldives
Project features	Construction of a resort hotel and required amenities including a training hotel for hospitality industry
Positions held	EIA team member
Responsibilities	Preparation of the EIA report

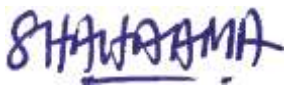
Referees

Dr. Mohamed Shiham Adam, PhD
Marine Research Centre
Ministry of Fisheries and Agriculture
Male', Republic of Maldives
Tel. No: +960 331 3681
Email: msadam@mrc.gov.mv

Dr. Charles Anderson
anderson@dhivehinet.net.mv
charles.anderson11@btinternet.com

Certification

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes my qualifications, my experience, and me. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.



Shahaama A. Sattar Date: October 2018

CURRICULUM VITAE

1. POSITION: Environment Analyst

2. NAME OF FIRM: LaMER Group Pvt.Ltd

3. NAME: Azim Musthag

4. DATE OF BIRTH: 13th December 1985

5. NATIONALITY: Maldivian

6. PERSONAL ADDRESS: M. Anthias, Fulooniya Magu, Malé, Maldives

7. EDUCATION

Bachelor of Marine Science (Majoring in Marine Ecology), Griffith University, Queensland, Australia.

DELF (Diplôme d'études en langue française) Level A1 and Level A2

8. MEMBERSHIP OF PROFESSIONAL SOCIETIES: Master Instructor with the Scuba Schools International (SSI).

9. OTHER TRAINING:

Fish Watch Training Workshop conducted by Darwin Reef Fish Project initiated by the Marine Research Centre of Maldives in collaboration with Marine Conservation Society (UK) in 2009.

IUCN Manta Ray Workshop in 2013.

National Coral Reef Monitoring Framework monitoring protocols training in 2014 conducted by IUCN Maldives.

10. COUNTRIES OF WORK EXPERIENCE: Maldives and Australia

11. LANGUAGE AND DEGREE OF PROFICIENCY:

English - Native or bilingual proficiency
Dhivehi - Native or bilingual proficiency
French - Limited working proficiency

12. EMPLOYMENT RECORD:

2005 - 2011	Dive Instructor, Maldivers Diving Centre, Malé.
2012 – 2014	Dive Instructor, Diveoceanus Dive Centre at Paradise Island Resort
2017 - 2017	Research Assistant Griffith University, Gold Coast, Australia.
2018 (Present)	Environmental Analyst Lamer Pvt Ltd

13. DETAILED TASKS ASSIGNED: **WORK UNDERTAKEN THAT BEST ILLUSTRATES CAPABILITY TO HANDLE TASKS:**

Project: Ecological surveys for the proposed, potential UNESCO biosphere reserves.
Year: 2018

Location: Maldives
Client: IUCN Maldives
Main project features: Surveying of 5 reefs and 3 islands.
Position: Consultant.
Activities performed:
Conducted ecological (marine and terrestrial) surveys at the proposed sites
Data compilation and analysis
Assisted in the final report development.

Project: Environmental Monitoring Report for resort development
Year: 2018
Location: Maldives
Client: Pearl Atoll Pvt Ltd
Main project features: Survey for the Environmental Monitoring Report
Position: Environmental Analyst
Activities performed:
Conducted the marine component of the survey. The seawater quality analysis, sedimentation analysis, reef benthic surveys, and fish surveys.

Project: Environmental Impact Assessment Report for resort development
Year: 2018
Location: Bodufushi, Raa Atoll.
Client: Alibey Maldives Pvt Ltd
Main project features: EIA Survey for an addendum
Position: Environmental Analyst
Activities performed:
Conducted the marine component of the survey. The seawater quality analysis, reef benthic surveys, and fish surveys.

Project: Environmental Impact Assessment for Coastal Protection and Entrance Clearance.
Year: 2018
Location: Bandos Island Resort, Kaafu Atoll.
Client: Bandos Island Resort.
Main project features: EIA Survey
Position: Environmental Analyst
Activities performed:
Conducted the marine component of the survey. The seawater quality analysis, reef benthic surveys, and fish surveys.

Project: Third Addendum to the Environmental Impact Assessment Report
Year: 2018
Location: Enboodhoo Finolhu Lagoon
Client: Dream Islands Development Pvt Ltd
Main project features: Reclamation of Islands for Resort Development at Enboodhoo Finolhu Falhu, South Malé Atoll
Position: Environmental Analyst
Activities performed:
Conducted the marine component of the survey. The seawater quality analysis, reef benthic surveys, and fish surveys.

14. Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

_____ Date: 05th August 2018

[*Signature of staff member or authorized representative of the staff]* *Day/Month/Year*

Full name of staff member: Azim Musthag

بسم الله الرحمن الرحيم

CURRICULUM VITAE (CV)

1. **Full Name/ Address:** Aishath Abdulla

2. **Date of Birth**: 10/09/1986 **Nationality**: Maldivian

3. **Education**: 2012 Masters in Environment & Development, University of Melbourne, Australia

   2010 BA (Hons) in Urban and Regional Planning, International Islamic University Malaysia, Malaysia

4. **Membership of Professional Associations/Non-Governmental Organisations**: - Secretary of Small Island Research Group NGO

5. **Other Training**: Attended the Expert Group Meeting (EGM) on: Urbanization in Small Island Developing States as an Urban Planner from the Maldives; at the United Nations in New York (June 2016)

6. **Countries of Work Experience**: Maldives, Malaysia

7. **Languages**: Dhivehi-Good, English-Good

8. **Experience/ Employment Record (General)**

February 2013- Present	Senior Planner: Work in environmental and planning consultancies, including preparation of plans, studies and EIA reports etc LAMER Group Pte Ltd Male' Maldives
November 2010 – January 2011	Urban Planner/ Acting- Business Development Manager: Work in handling and managing bidding processes, HR, project proposals, Marketing. Planning related projects Riyan Pte.Ltd Male' Maldives
May 2009 - July 2009	Urban Planner-Trainee ANZ PLANNERS SDN. BHD Selangor Malaysia

9. Specific Experience/ Employment Record (as per TOR requirements)

Maldives Housing Market Needs and Assessment Study; Maldives Urban Development and Resilience Project (MUDRP)
Year: September 2020-Ongoing
Client: Ministry of National Planning, Housing and Infrastructure
Position Held: Qualitative Analyst
Duties Rendered: Design, conduct and reporting of Consumer Research; mapping of existing regulatory and institutional frameworks related to housing and land in Maldives; provide input to the recommendations to develop national housing policy and housing strategy.

Developing International Port Facilities in the North or South of Maldives; Stage 2 Reports – Transhipment Hub in Ihavandhippolhu Atoll
Year: July 2020
Location: Upper North Atoll, Maldives
Client: Ministry of Economic Development
Positions Held: Social Impact Assessment Consultant
Duties Rendered: Assessment of socio-economic setting and impacts, stakeholder consultations, public perception survey, social impact analysis and report writing.

Preparation of an Integrated Urban Development Master Plan for Addu City
Year: October 2019-Onhold
Client: Addu City Council
Position Held: **Urban** Planner and Project Manager
Duties Rendered: Carry out consultations and assessments, preparation of plans, overall management of the project

Preparation of B. Hithaadhoo Land Use Plan
Year: August 2019 to October 2019
Client: Hithaadhoo Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Preparation of Ga. Kondey Land Use Plan
Year: March 2019 to July 2019
Client: Kondey Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Maldives Building Regulatory Capacity Assessment (BRCA), Building Regulation for Resilience Program
Year: January 2018- October 2019
Location: Male', Maldives
Client: Ministry of National Planning and Infrastructure, Maldives
Positions Held: Urban Planner,
Duties Rendered: Technical contribution to BRCA Component 1 and 3 assessment for Maldives, and associated recommendation development. Material and technical support to 2. Participation and

facilitation of kick-off workshop in Maldives. Facilitation and logistical support for the Action-Planning Workshop in Maldives

Environmental and Social Impact Assessment for the proposed North Upgrading of Infrastructure at North Regional Waste Management Facility Zone 2, Raa Vandhoo
Year: December 2018 – January 2019
Location: Raa atoll Vandhoo, Maldives
Client: Ministry of Environment, Maldives
Positions Held: Urban Planner, Social Impact Assessment Consultant
Duties Rendered: Assessment of possible environmental and social impacts of the proposed upgrade at the WMC. Community consultations, social impact analysis and report writing

Assessment of Climate Sensitive Natural Resources in Laamu Atoll and Preparation of Resources Maps
Year: July 2016- July 2018
Client: UNDP
Position Held: Project Coordinator
Duties Rendered: Overall coordination of the project which includes project planning, keeping PMU updated on the progress of the project, facilitate the project team in addressing the issues, delays etc during the project.

Preparation of R. Inguraidhoo Land Use Plan
Year: March 2018 to May 2018
Client: Inguraidhoo Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Development of Training Modules, Materials and Field Training; Organic Farming and Handicraft, Climate Change Adaptation Project (CCAP), Livelihood support program for wetland management
Year: June 2017 to February 2018
Client: Ministry of Environment and Energy
Position Held: Project Leader
Duties Rendered: Development of training materials, project Coordination and Reporting

Formulation of Coastal Protection Regulation, ICCRRIP Project
Year: September 2014 to January 2015
Client: Ministry of Environment & Energy
Position Held: Project Coordinator
Duties Rendered: Consultations, Input in formulation of Regulation and reporting

Developing a Handbook to Enhance the Capacity of Trainers to Increase the Resilience of People with Disabilities to DRR and CCA
Year: 2016
Client: National Disaster Management Center
Position Held: Consultant
Duties Rendered: Review and analyze existing; provide input in relevant stakeholder consultations;

Preparation of the handbook Preparation of AA. Feridhoo Land use plan
Year: 2016

Client: Feridhoo Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Preparation of K. Himmafushi Land use plan
Year: February 2016 to March 2016
Client: Himmafushi Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Tool Kit and Training Materials for Increasing Awareness on Climate Change Adaptation & Mitigation Measures in Tourism Sector (Kaaf, Alif Alif, Alif Dhaal, Baa & Lhaviyani Atoll)
Year: May 2015 to August 2015
Client: Ministry of Tourism
Position Held: Project manager
Duties Rendered: Preparation of Materials, Conducting workshops

Tool Kit and Training Materials for Increasing Awareness on Climate Change Adaptation & Mitigation Measures in Tourism Sector (For Tourism Staff)
Year: December 2015 to February 2015
Client: Ministry of Tourism
Position Held: Project manager
Duties Rendered: Preparation of Materials, Conducting workshops

Situation Analysis for the formulation of Master Plan for Sustainable fisheries (MASPLAN)
Year: February 2015 to March 2015
Client: JICA
Position Held: Consultant
Duties Rendered: Community Consultations, Analysis and reporting

Preparation of AA. Bodufolhudhoo Land use plan
Year: May 2015 to June 2015
Client: Bodufolhudhoo Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Preparation of AA. Mathiveri Land Use Plan
Year: June 2014 to July 2014
Client: Mathiveri Island Council
Position Held: Planner
Duties Rendered: Community Consultations, land use planning and reporting

Development of a National Framework/Plan on managing IDP's (internally displaced) persons/population caused by crises, emergencies and climate change
Year: May 2014 –Dec 2014
Client: UNDP/NDMC
Position Held: Team Leader
Duties Rendered: Overall project coordination and delivery

Preparation of Disaster Management Plan for a Guest House

Year: 2014
Client: Sea Side Lodge Guesthouse Manager, Hulhumale'
Position Held: Planner
Duties Rendered: Preparation of the disaster management plan according to the guidelines set by

Perceptions and understandings of climate change and migration survey (K.Guraidhoo and R.Dhuvaafaru) carried out by a Norwegian Research Institute
Year: August 2013 September 2013
Client: CICERO - Center for Climate and Environmental Research – Oslo; Norwegian Academic Institution
Position Held: Local Consultant
Duties Rendered: Assisted (CICERO to carry out the household survey, focus group discussions and the key informant interviews

Review and Update the Detailed Island Risk Assessment in the Maldives prepared for HDh. Kulhudhuffushi and GDh. Thinadhoo
Year: March 2013 to September 2013
Client: Ministry of Environment and Energy
Position Held: Social Planner/Project Coordinator
Duties Rendered: Review all relevant documents related to DIRAM study, study the social aspects impacting the risks of the islands and overall management of the project.

Integration of Climate Change Risk Resilience into Land Use Planning
Year: February 2011 to April 2011
Client: Ministry of Housing and Environment
Position Held: Planner/Project Coordinator
Duties Rendered: Provide input in planning perspective and also over all coordination of the project inclusive of conducting a workshop to present the findings

Preparation of Heritage Action Plan and Preliminary Inventory
Year: September 2011 to November 2011
Client: Department of National Heritage
Position Held: Team Leader
Duties Rendered: Proposed action plan for the protection and safeguarding of national heritage. Prepared a preliminary inventory of the existing tangible and intangible heritage of Maldives

Preparation of Atoll and Island Development Plans for AA. Atoll
Year: September 2011 to December 2011
Client: Secretariat of AA Atoll council
Position Held: Planner/ Project Manager
Duties: Manage and prepare the development plans

Reviewing the Third Tourism Master Plan 2005-2011
Year: December 2010 to October 2011
Client: Ministry of Tourism Arts and Culture
Position Held: Planner/Project Coordinator
Duties Rendered: Provide input in planning perspective and also over all coordination of the project inclusive of conducting a workshop to present the findings

Preparation of a detailed Layout Plan for Tourism Zone (Asseyri Project)

Year: December 2010 to February 2011
Client: Ministry of Tourism Arts and Culture
Position Held: Planner/Project Coordinator
Duties Rendered: Provide input in planning perspective through preparing the layout plan and also over all coordination of the project inclusive of conducting a workshop to present the findings

Appraisal of Hithadhoo Regional Hospital Development
Location: S. Hithadhoo, Maldives
Year : November 2010
Client: OPEC Fund for International Development (OFID)
Position Held: Socio Assessment Specialist/Project Coordinator
Duties Rendered: Overall Coordination of the project and carry out social Impact assessment study.

Mapping study of infrastructure and resources for Youth
Location:
Year : January 2010 to April 2010
Client: UNDP
Position Held: Assistant project coordinator
Duties Rendered: Assisting in overall coordination of the project

Professional Referees

Name: Najfa Shaheem Raazee

Position: Project Manager of ICCRRIP Project, Ministry of Environment and Energy

Email Address: najfa.raazee@environment.gov.mv

Name: Hamdhaan Zuhair

Position: Environmental and Social Safeguards Officer (CCAP), Ministry of Environment and Energy

Email Address: hamdhaan.zuhair@environment.gov.mv

Name: Ismail Abid

Position: Managing Director, Land and Marine Environmental Resource Group Pvt Ltd.

Email Address: ismail.abid@lamer.com.mv

References

CITRES and MEECO, 2019. *Feasibility Study for a Regional Solid Waste Management System in Zone IV and V, Maldives - REPORT PHASE 2 – DRAFT 1 FINAL VERSION*. Prepared for Maldives Clean Environment Project - Ministry of Environment

Falkland, T. 2001. *Report on Groundwater Investigations in Northern Development Region (ADB Regional Development Project).* Report for Ministry of Planning and National Development. Maldives.

MEE, 2016. *Environmental and Social Assessment and Management Framework (ESAMF) & Resettlement Policy Framework (RPF)* - Maldives Clean Environment Project. 203 pp

Zuhair, A. H., 2018. *Environmental Management plan for the proposed development of Island Waste Centre in Dh. Rinbudhoo*. Prepared for Ministry of Environment

Zuhair, A. H., 2021. *Environmental and Social Management plan for the proposed establishment of Island Waste and Resource Management Centre in Th. Madifushi*. Prepared for Ministry of Environment

Appendices

Appendix 1 List of abbreviations

EIA	-	Environmental Impact Assessment
EPA	-	Environmental Protection Agency
ESMP	-	Environmental and Social Management Plan
IWRMC	-	Island Waste and Resource Management Centre
MCEP	-	Maldives Clean Environment Project
ME	-	Ministry of Environment
OWC	-	Organic Waste Converter
RWMF	-	Regional Waste Management Facility
TOR	-	Terms of Reference

Appendix 2 Terms of Reference

TOR E: Environmental and Social Code of Practice for projects involving minimal civil works

1. **Project Description:** Describe the project in terms of civil works required for the installation of the composting machine. This will only include enclosing the existing compost slab with four walls and a roof, and connecting electricity and water (via installation of a water tap from the existing groundwater well) to this building. A concept design of this building indicating its proposed location within the existing IWRMC shall be provided.

   Provide details of the composting machine, which shall include the following.

   - Concept design and process flow diagram of the composting machine.
   - Type and amount of waste that it can treat (food waste, green waste, paper etc. in mixed form or separated) and details of any products required for activation (such as bioculum) including its corresponding quantities to operate for a period of 1 year.
   - Solid and liquid bi-products and output of the process (wet / dry compost) including the method for their potential use and/or disposal.

2. **Existing Site Condition:** Undertake a visual analysis of the existing IWRMC via a site visit. Information related to the types of waste currently stored at the IWRMC (if any) and their respective quantities, and the condition of the existing compost slab and groundwater well shall be provided.

   Indicate if there are any apparent alarming concerns or threats towards long term sustainability of the IWRMC due to natural causes (such as coastal erosion and inundation) and human interventions (such as vibrations from planned nearby construction actives).

   Note: visual inspection either via video or photographs should only be done if physical travel is not possible owing to COVID19 restrictions.

3. **Mitigation Plan:** Provide mitigation plans separate for construction and operational phase by taking into account findings of the site condition analysis and potential impacts associated with the installation of the compost machine.

   Mitigation measures proposed for construction phase should be focused in particular on occupational health and safety, public safety, labor code of conduct, dust management, noise, fire-safety and waste management. Adequate consideration shall be given to manage the COVID19 situation during

construction phase via daily temperature checks, cleaning procedures, shift roaster, arrangement for social distancing in labor camps, establishment of handwashing facilities at work site and labor camp etc.

Mitigation measures proposed for the operational should include the following in particular.

- **Odor Management:** Assess if the technology has an inbuilt odor management system and managed odors automatically.
- **Fluid and Discharges:** Will there be any fluid discharges from the proposed technology, will the machines require any extra piping space or water discharge systems or expansion of the existing leachate management system provided via the design, the consultants should propose suitable design requirements if so in the ESMP.
- **Waste Inputs:** Assess if the technology requires additional segregation of pre management of the incoming organic waste. Indicate specifically under the section on operational aspects of the ESMP what steps need to be taken specifically by the IWRMC operators in handling in coming waste to ensure it can be efficiently used in line with the proposed technology.
- **Energy Requirements and Efficiency:** The energy requirement to run the machinery and the status of energy efficiency of the machinery proposed should be assessed.
- **Sludge and Residuals:** The nature and amount of all residual material produced, solid and liquid should be assessed and recommend means by which it can be re-used and/or managed in the ESMP. If reuse is recommended the consultant should also recommend the requirements for routine monitoring of quality of the digestate and liquid residue for instance if it is recommended to be used in agricultural processes.
- **Safety features on the machinery:** such as presence of emergency stop buttons, emergency lights and/or alarms for emergency use are equipped to ensure the best level of safety should be present and the consultants should assess if the proposed technology, especially machinery include these in addition to proposing other safety features in the ESMP.

Cost the mitigation measures, equipment and resources required to implement those measures. An Environmental and Social Management Plan for the proposed project, identifying responsible persons, their duties and commitments shall also be given. The environmental and social management plan should be presented in matrix format, clearly indicting the responsible person, cost, equipment and resources required for each proposed action. In cases where impacts are unavoidable arrangements to compensate for the environmental and / or social effect shall be given.

Mitigation measures should be presented as a matrix consistent to the format provided below.

Proposed Mitigation Measures	**Institutional Responsibilities** (Implementation and Supervision)	**Estimated Quantities Required and Material Specifications Recommended**	**Cost Estimates**	**Comments** (e.g. secondary impacts**)**
Detailed design and planning Phase				
Pre-Construction Phase -Site Preparation				
Construction Phase				
Operation and Maintenance Phase				

The confirmation of commitment of the developer to implement the proposed mitigation measures shall also be included. The proposed ESMP matrix shall be translated to Dhivehi language and provided as an Annex to the report.

4. **Grievance Redress Mechanism (GRM):** Describe the proposed grievance redress mechanism of the project developed by the PMU and offer suggested improvements (if any). The focal point from the council for managing grievances shall be identified and his / her contact details provided. Describe how the GRM details will be publicly made available by displaying the details/contacts on a visibility board.

5. **Consultation with the Island Council:** Undertake consultation with the Island Council (via telephone or online means) to provided information regarding the proposed composting machine. The operations and maintains (O/M) requirements of the machine shall be specifically highlighted, since the council will be responsible for operating the machine. A summary of the major discussion and outputs of this consultation shall be provided.

   Provide a brief consultations plan to recommend how the Island Council should be consulted further throughout the process from design, installation and O/M stage, so that their inputs/feedback are taken into consideration during the process.

6. **Monitoring Program:** The monitoring program should be brief and non-exhaustive, mostly limited to visual checks. Identify the critical issues requiring monitoring to ensure compliance to the proposed mitigation measures. Detail of the monitoring program including the physical and biological parameters for monitoring, cost commitment from responsible person to conduct monitoring in the form of a

commitment letter, detailed reporting scheduling, costs and methods of undertaking the monitoring program must be provided.

The monitoring program should give details of the following;

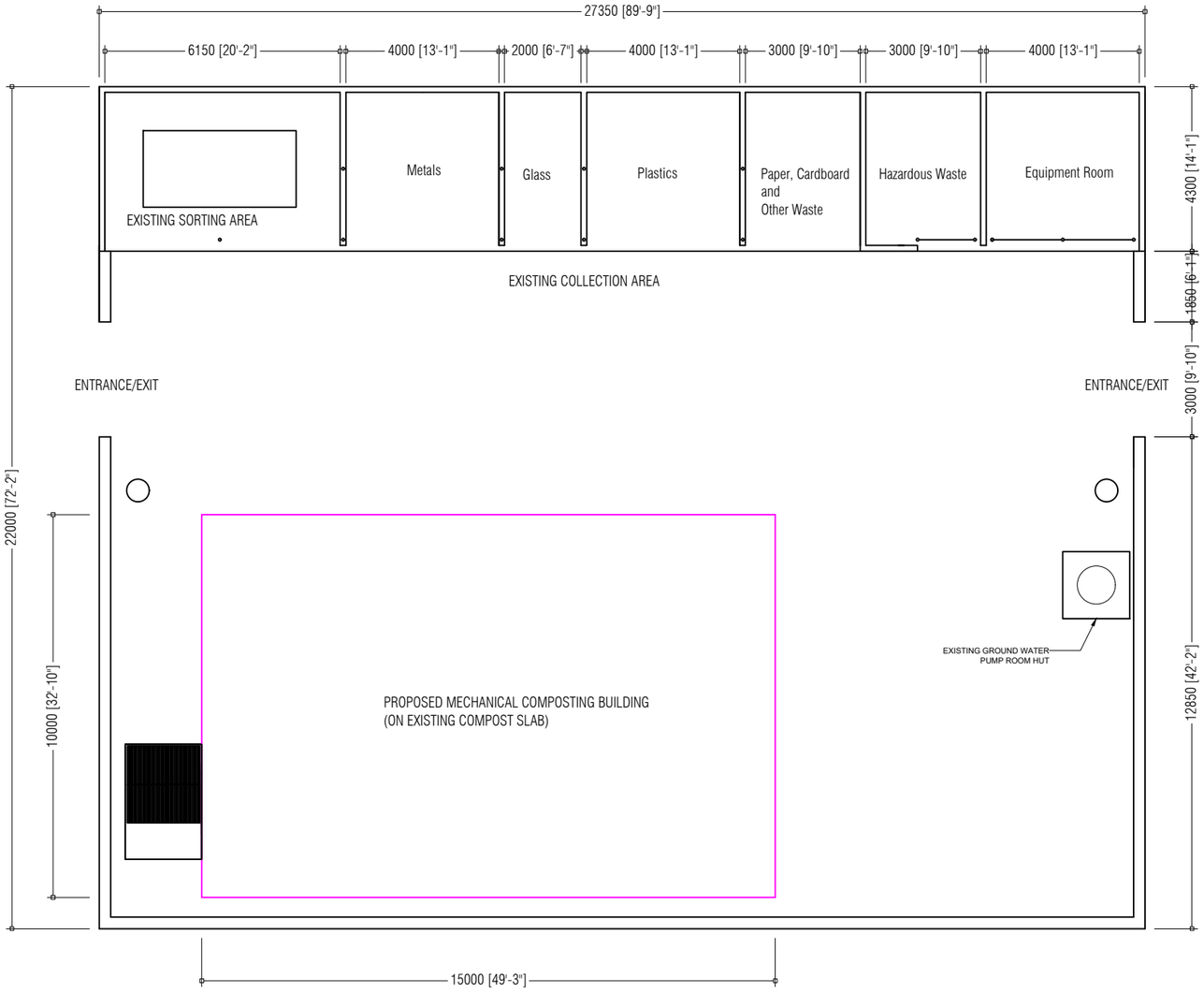
- Monitoring indicators to be measured for evaluating the performance of each mitigatory measure (for example national standards, engineering structures, extent of area replanted, etc.).
- Monitoring mechanisms and methodologies
- Monitoring frequency
- Monitoring locations
- Cost of monitoring
- Responsible party

The recommended format for presenting the monitoring program is given below.

Proposed Mitigation Measure	**Parameters to be monitored**	**Location**	**Measurements** (Incl. methods & equipment)	**Frequency of Measurement**	**Responsibilities** (Incl. review and reporting)	**Cost** (equipment & Individuals)
Detailed design and planning Phase						
Pre-Construction Phase						
Construction Phase						
Operation and Maintenance Phase						

Presentation- The ESCP report, to be presented in digital format, will be concise and focus on mitigating significant environmental and social issues. The report shall include Dhivehi translations of the ESMP matrix. All raw data collected, should also be submitted in Raw form to the client in digital format.

Appendix 3 Site plan



PREPARED BY	PROJECT	DESIGN BY	AMENDMENTS
MCEP MINISTRY OF ENVIRONMENT GREEN BUILDING, HANDHUVAREE HIGUN, MAAFANNU, MALE' (20392), REPUBLIC OF MALDIVES, TEL: +960-3018431, +960-3018300, FAX: +960-328301	CONSTRUCTION OF MECHANICAL COMPOSTING BUILDING DH.RINBUDHOO		
	TITLE FLOOR PLAN	STRUCTURE BY	
	CLIENT DEPARTMENT WMPC DEPARTMENT	DRAWN BY AFRAZ	
	PAPER SIZE A3 PAGE NO. 01	SCALE 1:150 DWG NO. CBRINB-A1-01 DATE 05.10.2020	

Appendix 4 Map of Rinbudhoo showing shoreline and erosion areas


MAP LEGEND
HIGH TIDE LINE (HWL)
LOW TIDE LINE (LWL)
VEGETATION LINE (VEG)
EROSION LINE
HARBOR DEVELOPMENT AREA
IWRMC
IWRMC
On Going harbor project
NORTH
Geodetic Parameter :
Zone : UTM Zone 43
Spheroid : WGS 1984
Vertical Datum : MEAN SEA LEVEL
LAMER
0
50
110
150
200
250m

Appendix 5 Translation of the Environmental and Social Management Plan (matrix)

ޕްރޮޖެކްޓްގެ މަރުޙަލާ	ތިމާވެއްޓަށް ކޮށްފާނެ އަސަރުތައް	ތިމާވެއްޓަށް ކޮށްފާނެ އަސަރު ކުޑަކުރުމަށް އެޅިދާނެ ފިޔަވަޅުތައް	ޒިންމާ ނަގަންޖެހޭ ފަރާތް (މަސައްކަތް ކުރުމުގައާއި ސުޕަވައިޒް ކުރުމުގައި)	ބޭނުންވާނެ ތަކެތީގެ ވަސީލަތާއި އަދަދު	އެސްޓިމޭޓް ކުރެވޭ އަގު	އިތުރު މަޢުލޫމާތު
އިމާރާތް ކުރުމުގެ މަރުޙަލާ	އިމާރާތް ކުރުމަށް ބޭނުންކުރާ ތަކެތި ގެންގުޅުމުގައާއި އެއްތަނުން އަނެއްތަނަށް އުފުލުމުގައި، މޫދާއި ފަރުގެ މާހައުލަށާއި ރަށުތެރޭގެ މާހައުލަށް ކޮށްފާނެ ނުރަނގަޅު އަސަރު	- އިމާރާތް ކުރުމަށް ބޭނުންކުރާ ތަކެތި އެއްތަނުން އަނެއްތަނަށް ގެންދާއިރު ހުންނަނީ ރަނގަޅަށް ބަންދުކޮށްފައިވާ ކަން ޔަޤީންކުރުން - އެކި ދިމާލުގައި ތަކެތި ނުބެހެއްޓުން - ވޭސްޓުތައް ރަނގަޅަށް ބެލެހެއްޓުމާއި ތެޔޮފަދަތަކެތި ލީކުވާ ބޭރަށް އެޅޭހޯ ބެލުން	- ކޮންޓްރެކްޓަރު-އިމާރާތް ކުރާ ފަރާތް (ތަންފީޒުކުރުން) - ޕްރޮޖެކްޓް ހިންގާ ފަރާތް (ސުޕަރވައިޒް ކުރުން)			
	އިމާރާތްކުރުމަށް ގެންގުޅޭ ތަކެތި ގުދަންކުރުމުގައި ތިމާވެއްޓަށް ކުރާ ނުރަނގަޅު އަސަރު	- ދިޔަކެތި ބެހެއްޓޭ ސަރަހައްދުތަކުގައި ބިމަށް ނުފޭދޭ ގޮތަށް ދަށުގައި އެއްޗެއް އެޅުމަށްފަހު ގުދަންކުރުން - ތަކެތި ބެހެއްޓޭ ސަރަހައްދު ރަގަޅަށް ހިފާޒަތްކުރުން އަދި ގަވާއިދުން ބަލާ ފާސްކުރުން - ރަށުތެރޭގައި އުޅަނދުފަހަރު ދުއްވުން މަދުކުރުން	- ކޮންޓްރެކްޓަރު-އިމާރާތް ކުރާ ފަރާތް (ތަންފީޒުކުރުން) ޕްރޮޖެކްޓް ހިންގާ ފަރާތް (ސުޕަރވައިޒް ކުރުން)			

		ދަނޑުވަށް ގަދަކަމުގައި ވާހަކަ ދައްކާ ކަމަށް				
	ތިމާގެ ކައިވެނި ދެކެ ދެކުނު ކަންކަމުގައި ތިމާގެ ބަލައިގަތުން ދުވަސް ދުވަހު ކަންކަމުގައި ތިމާ ދެކެ ދެކުނު ކަންކަމުގައި ތިމާ ދެކެ ދެކުނު	- ދަނޑުވަތަށް ދާނެ ދުވަސް ތަކުގައި ކައިރީ ގެދޮރުގެ ބަލި ފަރާތްތަކަށް ބަލައިގަތުން ދިނުމަށް ކުރިން ދަންނަވައި ދިނުން			
		- ދަނޑުވަތަށް ދާ ދުވަސް ތަކުގައި ކައިރީ ގެދޮރުގެ ބަލި ފަރާތްތަކަށް ބަލައިގަތުން ދިނުމަށް ކުރިން ދަންނަވައި ދިނުން (ކުށްވެރިކަމާ ގުޅޭ)				

		ނުވަތަ ކޮންޓެއިނަރުގެ ބަންދުކުރުން				
	މަސައްކަތް ކުރުމަށް ގެނެވޭ، ރަށުންބޭރު މަސައްކަތްތެރިންގެ ސަބަބުން ދިމާވެދާނެ އިޖްތިމާޢީ މައްސަލަތައް	- ރަށުން ބޭރުން އަންނަ މަސައްކަތްތެރިންނަށް، ޚާއްސަކޮށް ބިދޭސީން ރަށުގެ މާހައުލާ ދިވެހިންގެ ދިރިއުޅުން އަދި އާދަކާދައަށް އަސަރުފޯރި ކުރުވުން - ރާއްޖޭގައި ކުރެވޭނެ ކަންތަކާއި ނުކުރެވޭނެ ކަންތައް ބިދޭސީ މަސައްކަތްތެރިންނަށް ރަނގަޅަށް އެނގުން - މައްސަލަ ހައްލު ކުރުމުގެ ނިޒާމު (ގްރީވަންސް ރެޑްރެސް މެކޭނިޒަމް) ޤާއިމު ކުރުން، އަދި މައްސަލަތައް އޮވެއްޖެނަމަ ގުޅެންޖެހޭ ފޯން ނަންބަރުތައް މަސައްކަތު ސަރަޙައްދުގާއި، ކައުންސިލް ނޯޓިސްބޯޑު އަދި ރައްޔިތުން އެއްވެ އުޅޭ ސަރަޙައްދުތަކުގައި ހަރުކުރުން	- ކޮންޓްރެކްޓަރު-އިމާރާތް ކުރާ ފަރާތް (ތަންފީޒު ކުރުން) - ޕްރޮޖެކްޓް ހިންގާ ފަރާތް (ސުޕަރވައިޒް ކުރުން)	މި ރިޕޯޓުގެ ޗެޕްޓަރ 5.1 ގައި ހިމަނާފައިވާ މައްސަލަ ހައްލު ކުރުމުގެ ނިޒާމު (ގްރީވަންސް ރެޑްރެސް މެކޭނިޒަމް) އަށް އަމަލުކުރުން		މިކަމަށް އިތުރު ޚަރަދެއް ނުހިނގާނެ
	އަޑުގަދަވުމުގެ ސަބަބުން ދިމާވެދާނެ ދަތިތައް	- ދުވާލުގެ ވަގުތުތަކުގައި (ހެނދުނު 6 ކުން ހަވީރު	- ކޮންޓްރެކްޓަރު-އިމާރާތް ކުރާ ފަރާތް (ތަންފީޒު ކުރުން)			

		6 ކަނޑު) ދިވެހިރާއްޖެ ތެރޭގައި ކުޅެދާނެ	- ފުރިހަމަ ކުރިއަށް ގެންދެވޭ (ސުވަރުކަމެއް ކަމަށް)			
	ވަރަށްބޮޑު ކަންތައް ކުރުމުގެ ތެރޭގައި	- ފާހަގަކުރެވޭ ބަދަލުތަކާ ގުޅިގެން ދިވެހިރާއްޖެ ތެރޭ	- ކުރިއަށް ގެންދެވޭ ބަދަލުތަކާ ގުޅިގެން ކުރެވޭ			
	ސިނާރިއޯ ފުރިހަމަ ކުރުމުގައި ކުރިއަށް ގެންދެވޭ	- ބަދަލުތަކާ ގުޅިގެން ކުރެވޭ	- ބަދަލުތަކާ ގުޅިގެން ކުރެވޭ			
	ފަރާތްތަކާ ގުޅިގެން ކުރިއަށް ގެންދެވޭ	- ބަދަލުތަކާ ގުޅިގެން ކުރެވޭ	- ބަދަލުތަކާ ގުޅިގެން ކުރެވޭ			

ކޯންޓްރެކްޓު ގައި				ސިއްރީ ސަލާމަތްތެރިކަމަށް ރައްކާތެރިވުމުގެ ގޮތުން ކުރަންޖެހޭ ކަންތައް މިކަމުގައި އުޅޭ އެންމެނަށް ކިޔާދިނުން - މަސައްކަތް ކުރާ ފަރާތްތަކަށް ބޭނުންވާ މުހިއްމު ހުރި ސަލާމަތީ އާލާތްތަކެއް ލިބިފައިވާކަން ޔަގީންކުރުން (ސޭފްޓީ ހެޓް، ބޫޓު، މާސްކު، އަންގި އަދި މަސައްކަތަށް ބޭނުންކުރާ އައިން) - އެކިމަސައްކަތް ކުރުމުގައި ބޭނުންކުރަންޖެހޭ ސަލާމަތީ އާލާތްތައް ރައްކައިތާ ބޮޑެއް އެސަރަހައްދުގައި ބެހެއްޓުން - ފަސޭހައިން ވަދެވޭގޮތަށް ފާހާނާ އަދި އަތްދޮންނަ ތަނި/ ސިންކު ހުރިކަން ޔަގީން ކުރުން - މަސައްކަތުގައި އުޅޭ ފަރާތްތަކަށް ދުވާލެއްގެ މައްޗަށް 3 ކެއުން، އަދި ގަވާއިދުން ބޯފެންގެ އަދި އެގަޖީގައި މަޖުކޮށްފާނަ ތަނެއް ލިބޭކަން ޔަގީންކުރުން		

				- ފަސާރަންތަކުގެ ސަބަބުން ފަދަ ކަމެއް ކުރިއަށް ގެންދާ ގޮތަށް ބަދަލުތަކެއް ގެނައުން - ފަސާރަންތަކުގައި ދިރާގުދާ ތަކެތި ވިއްކުމަށް ބަދަލުތަކެއް ގެނައުން (ފުރިހަނޑުގެ ތަކެތި ގެންނަން ފެށުން) - ތިބާގެ ވިޔަފާރި ކަންކަމުގެ ދަށުން ކުރިއަށް ގެންދާ ކަންކަމުގެ ބަދަލުތަކެއް ގެނައުން ކޮވިޑ် 19 ގެ ފަރާތުން ކުރިއަށް ގެންދާ ކަންކަމުގެ ބަދަލުތަކެއް - ކޮވިޑ်-19 ގެ ކުރިން ކުރިއަށް ގެންދާ ގޮތަށް ބަދަލުތަކެއް ގެނައުން		

		ތުންފަ ފިނަ ހިންގުމުގެ ކަނޑައެޅުނު ތަންތަނުން ތެދުވެ - ކޮވިޑ်-19 ގެ ފަރާތުން ފެތުނުމުގެ ކުރިން ބަލަންޖެހޭ ކަންތައްތަކާ ގުޅުންހުރި ބައްދަލުވުންތަކުގައި ބައިވެރިވުން ހަނދާންކުރުން - ކޮންމެ ދުވަހަކު ތުންފަ ހިންގުމުގެ ކުރިން ތަންތަނުގެ ކަންތައްތަކާ ގުޅުންހުރި ބައްދަލުވުންތަކުގައި ބައިވެރިވާ ފަރާތްތަކުގެ ލިސްޓެއް ތަޔާރުކުރުން			
	ތަންތަނުގެ ބަލަހައްޓާ ބެހެއްޓުންތަކާ ގުޅޭ ކަންކަމުގައި ބައިވެރިވާ ފަރާތްތަކުގެ ލިސްޓް ތަޔާރުކުރުން	- ކައުންސިލް ކޮމިޓީގެ ކަންކަން ބަލަހައްޓާ ފަރާތްތަކާ ގުޅިގެން ކަންކަން ހިނގަމުންދާ ގޮތް، ތަރި ބަދަލުކުރުން ފުރަތަ ކޮމިޓީ ތަޔާރުކުރުން - ތަންތަނުގެ ބަލަހައްޓާ ކައުންސިލް ކޮމިޓީ ބަދަލުކުރުމާ ގުޅޭ ތަފާތު ގޮތްތަކާ ބެހޭ	- ކައުންސިލް ކޮމިޓީ-ތަންތަނުގެ ކޮމިޓީ ފުރަތަ (ތަކުރާ ކަންތައްތަކާ ގުޅޭ) - ބަޔާ ކަމުގައި ހުށަހެޅުން		ތަންތަނުގެ ބަލަހައްޓާ ބަދަލުކުރުމާ ގުޅޭ ކަންކަމުގައި ބައިވެރިވާ ފަރާތްތަކުގެ ލިސްޓް ތަޔާރުކުރުން

		- ފަރާތަށް ކަންތައް ކުރުމުގެ ކޮންޓްރެކްޓް (ފަރާތުގެ ނަން، ތަނާ ދާއިރާ ނަންބަރ، ކުންފުނީގެ ނަން، ކުންފުނީގެ ރަޖިސްޓްރީ ނަންބަރ، ކުންފުނީގެ ލިބިފައިވާ ގްރޭޑް، ކުންފުނީގެ ލިބިފައިވާ ކެޓަގަރީ، ކުންފުނީގެ ލިބިފައިވާ ކްލާސް)			
	ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުން	- ތަރައްގީ ކުރެވޭ ތަންތަން ތަފާތު ގޮތްގޮތަށް ބަލައި ގަބޫލުކުރުން - ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުމަށް ބޭނުންކުރާ ގޮތް ތަފާތު ގޮތްގޮތަށް ބަލައި ގަބޫލުކުރުން	- ތަރައްގީ ކުރެވޭ ތަންތަން ތަފާތު ގޮތްގޮތަށް ބަލައި ގަބޫލުކުރުމުގެ ގޮތުގައި ކުންފުނީގެ ލިބިފައިވާ ގްރޭޑް - ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުމަށް ބޭނުންކުރާ ގޮތް	ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުން	ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުމުގެ ގޮތުގައި ކުންފުނީގެ ލިބިފައިވާ ގްރޭޑް ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުމަށް ބޭނުންކުރާ ގޮތް
	ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުމުގެ ގޮތުގައި ކުންފުނީގެ ލިބިފައިވާ ގްރޭޑް	- ތަރައްގީ ކުރެވޭ ތަންތަން ކަށަވަރުކުރުމަށް ބޭނުންކުރާ ގޮތް	-			

				ބޭނުންކުރުން، އަދި ބާކީވާ ތަކެތި ކައުންސިލަން ހަދިޔާކުރުން - ގަސްގަހުން އުފެދޭ ކުނި އަވިން ހިއްކުމަށްފަހު އޭގެ ޗޮޕުގައި ފަސާދުވުމަން ރަނގު ވަޅުތެރެއަށް އެޅުން - ނަރުދަމާއިން ހުސްނަ ކުނި ވަގުތީގޮތުން ގުދަނުކުރުމަށްފަހު މަސްތޫރު ނިސްބަތުގެ މަސައްކަތުގެ ތެރެއިން ތިލަފުށި ފަދަ ސަރަހައްދަކަށް ކުނި ފޮނުވާކަށް ތަނަކަށް ގެންދިއުން - މަސައްކަތުގެ ތެރެއިން އުފެދޭ ނުރައްކާތެރި ކުނިގެ ބާވަތްތައް ރަގަޅަށް ބަންދުކުރެވޭ އާލާތެއްގައި ބަންދުކުރުން އަދި މަސްޢޫލު ނިޒާމުން ތިލަފުއްޓަށް ބޭރުކުރުން - މިފަދަ ކުނި ބަހައްޓާ ސަރަހައްދުތަކުގައި ބިމަށް ނުފެތޭގޮތަށް ބިމުގައި ކޮންކްރީޓް ނުވަތަ ގޯބަލް ޝީޓެއް އެޅުމަށްފަހު އެކުނި ގުދަނުކުރުން އަދި މިސަރަހައްދުތައް		

		ތަފާސްކުރުމުގެ ކޮށްދޭ ގޮތް				
ފާސްކޮށް ދެނެގަތުމަށް ގާތްގަނޑަކަށް ކަންކަން ބަލާ ގޮތް	ބަލައި ހޯދަންޖެހޭ ކަންތައް ކަނޑައެޅުމަށް ބޭނުންވާ ތަފާސްކުރުން	- ބޭނުންވާ ތަފާސްކުރުންތަކުގެ ލިސްޓެއް ތައްޔާރު ކުރުން (ތަފާސްކުރުން ކުރަންވާނެ ގޮތާ ބެހޭގޮތުން ކަންކަން ބަލާ ފަރާތްތަކާ ގުޅިގެން)	- ފާސްކޮށް ދެނެގަތުމަށް ބޭނުންވާ ތަފާސްކުރުންތަކުގެ ލިސްޓެއް ތައްޔާރު ކުރުން	ފާސްކޮށް ދެނެގަތުމަށް ބޭނުންވާ ތަފާސްކުރުންތަކުގެ ލިސްޓުގައި ހިމެނޭ ކަންތައްތަކާ ގުޅިގެން ކަންކަން ބަލާ ފަރާތްތަކުގެ ލިސްޓެއް ތައްޔާރު ކުރުން	ތަފާސްކުރުމުގެ ނަތީޖާ ބަލައި ބަލައިގެންދާ ގޮތް

				ޑެންޓަލް ސަރޖަރީންގުގެ ހުނަރާ ދާއިރާއަކުން) - ރަނގު ވޯސްޖް ޑެންޓަލް ސަރޖަރީގެ ހުނަރާ މުވައްޒަފުންނަށް ބޭނުންވާ ސަފާމަތީ އާލާތްތައް ފޯރުކޮށްދިނުން - ސަފާމަތީ ހުނަރު، އަދި މާސްކު އަދި ނުރައްކާ ވައްތަރުގެ ހަރު ބޫޓު މަސައްކަތް ކުރާ ފަރާތްތަކަށް ދިނުން - އަޑުގަދަ މެޝިނަރީއާއިއެކު މަސައްކަތްކުރާ ފަރާތްތަކަށް އިއަރ މަފް ދިނުން - ބޮޑެތި މެޝިނަރީއާއިއެކު މަސައްކަތް ކުރާ ފަރާތްތަކާއި، ކުނިބޭފުޅުގެ މަސައްކަތުގައި އުޅޭ ފަރާތްތަކަށް ހަރު ބޫޓު ދިނުން		
			-	- މެޝިން ބޭނުންކުރުމަށާއި ބެލެހެއްޓުމަށް ބޭނުންވާ ފުރިހަމަ ތަމްރީނުތައް ދިނުން - ގާއިމުން މެޝިން ސާފުކޮށް މަރާމާތު ކުރުން	ކުރި ކޮމްޕްރެސް ކުރުމަށް ބޭނުންކުރާ މެޝިން ހަމަކުރުން، ނުވަތަ ބޭނުންވާ ސާމާނު ނެތިގެން މަސައްކަތް ހުއްޓުން	

		- ފަރާތްތަކުން ދައްކާ ބަޔަކު 1 ބަދަލުގައި ހަމަ ހަމަ ދަށުގައި ބަލައިގެންވާ ގޮތް				
	ކާނާ ތަޔާރުކުރާ ބަދަލުގައި ކާނާ ހަދާ ބަލަ	- ކާނާ ތަޔާރުކުރާ ގޮތް (ކާނާގެ ބަދަލުގައި ބޭނުންކުރާ ތަކެތި) - ކާނާ ހެދުމުގައި ބޭނުންކުރާ ތަކެތި ސާފުކުރާ ގޮތް ދެނެގަތުމަށް ތަކެތި ހުންނަ ތަން/ ގޮތް ބަދަލުކުރާ ތަކެތި ހުށަހެޅުން	- ކާނާ ހެދުމުގައި ބޭނުންކުރާ ސާފުކުރާ ގޮތް - ކާނާ ކައިގެންވާ ގޮތް	ކާނާ ކައިގެންވާ ގޮތް	ކާނާ ކައިގެންވާ ގޮތް	
	ކާނާ ތަޔާރުކުރާ ބަދަލުގައި ބަލަހައްޓަންޖެހޭ ސާފުކަމާ ގުޅޭ ގޮތް	- ކާނާ ހެދުމުގައި ބޭނުންކުރާ ތަކެތި ސާފުކުރާ ގޮތް ދެނެގަތުމަށް ތަކެތި ހުންނަ ތަން/ ގޮތް ބަދަލުކުރާ ތަކެތި ހުށަހެޅުން - ފާޚާނާ ބޭނުންކުރާ ގޮތާ ގުޅޭ ސާފުކަމާ ބެހޭ ގޮތް ދެނެގަތުމަށް ކާނާ ތަޔާރުކުރާ ބަދަލުގައި ބަލަހައްޓަންޖެހޭ ސާފުކަމާ ގުޅޭ ގޮތް	- ކާނާ ހެދުމުގައި ބޭނުންކުރާ ތަކެތި ސާފުކުރާ ގޮތް ދެނެގަތުމަށް ކާނާ ތަޔާރުކުރާ ބަދަލުގައި ބަލަހައްޓަންޖެހޭ ސާފުކަމާ ގުޅޭ ގޮތް - ފާޚާނާ ބޭނުންކުރާ ގޮތާ ގުޅޭ ސާފުކަމާ ބެހޭ ގޮތް ދެނެގަތުމަށް ކާނާ ތަޔާރުކުރާ ބަދަލުގައި ބަލަހައްޓަންޖެހޭ ސާފުކަމާ ގުޅޭ ގޮތް			

		- ފަނާވެދާނެ ކަނޑުގެ ކަނޑާއި ގުޅިގެންވާ ކަނޑުގެ ބައި ތަކުގެ ދިގުމިން ދެމެދުގެ ދިގުމިން ކަނޑައެޅުން - ބަލި ތަކެއްގެ ދަށުން، ފެންވަރު ގޯސްވެ ގެންދާ ގޮތަށް ކަނޑައެޅުން ކަނޑައެޅުން			
	ދިރާސާ ތަކުގެ ނަތީޖާ ތަކުގެ ބޭނުންތެރިކަން	- ގޯސްވެ ގެންދާ ގޮތަށް ކަނޑައެޅުން ކަނޑައެޅުން ގާތް ގޯސްވެ ގެންދާ ގޮތަށް ކަނޑައެޅުން ކަނޑައެޅުން ކަނޑައެޅުން (ދާއިރާ ތަކުގެ ކަނޑާއި ގުޅިގެންވާ ކަނޑުގެ ބައި ތަކުގެ ދިގުމިން) ކަނޑައެޅުން - ބަދަލު ކުރުން ކަނޑައެޅުން ކަނޑާ (ފެނުގެ ކަނޑައެޅުން ގެއްލުން) ކަނޑައެޅުން، ތަނަ ބަދަލު ކުރުމުގެ ކަނޑައެޅުން ކަނޑައެޅުން ކަނޑައެޅުން، ކަނޑައެޅުން ތަނަ ކަނޑައެޅުން ގެއްލުން ކަނޑައެޅުން ގޮތަށް ކަނޑައެޅުން	- ކަނޑައެޅުން- ތަނާ ގުޅޭ		

	ފަސޭހަކަށް ކުރެވޭ ތަކެއް	- ކާނާ ފުއްދުމުގައި ބޭނުންކުރާ ތަކެއްޗާ ގުޅިގެން ދަންނަ ކަންތައް - ކާނާ ތަކެއް ފުއްދުމުގައި ހިނގާ ގޮތް - ތަކެއްޗާ ގުޅިގެން ދަންނަ ކަންތައް - ކާނާ ތަކެއް ފުއްދުމުގައި ހިނގާ ގޮތް				
	ފަސޭހަކަށް ކާނާ ތަކެއް ތައްޔާރުކުރުން ނުވަތަ ގަތުން	- ކާނާ ތަކެއް ތައްޔާރުކުރުމުގައި ބޭނުންކުރާ ތަކެއްޗާ ގުޅިގެން ދަންނަ ކަންތައް - ކާނާ ތަކެއް ތައްޔާރުކުރުމުގައި ހިނގާ ގޮތް - ތަކެއްޗާ ގުޅިގެން ދަންނަ ކަންތައް - ކާނާ ތަކެއް ތައްޔާރުކުރުމުގައި ހިނގާ ގޮތް	-			