ENVIRONMENTAL MANAGEMENT PLAN

FOR THE PROPOSED

CONSTRUCTION AND OPRATION OF AN ISLAND WASTE MANAGEMENT CENTRE

IN HOADEDHDHOO,
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4 March 2018

Prepared for
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Lead Consultant's Declaration

I certify that statements made in this Environment Impact Assessment are true, complete and correct to the best of my knowledge and available information.

Dr Ahmed Shaig

Letter of Commitment

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(Please refer to Appendix B)

Ministry of Environment and Energy Award Letter

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(Please refer to Appendix C)

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ACCRONYMS AND ABBREVIATIONS

Council	Island Council
DO	Dissolved Oxygen
DNP	Department of National Planning
DoIE	Department of Immigration and Emigration
EA	Employment Approval
EHS	Environmental, Health and Safety Guidelines
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EMP	Environmental Management Plan
ESIA	Environment and Social Impact Assessment
ET	Employment Tribunal
GPS	Global Positioning System
HCW	Health-care waste
HCWM	Health-care waste management
ILO	International Labour Organisation
IOM	International Organisation for Migration
IPCC	Intergovernmental Panel on Climate Change
IPPC	International Plant Protection Convention
IUCN	International Union for Conservation of Nature
KWp	Kilowatt Peak
LRA	Labour Relations Authority
MEE	Ministry of Environment and Energy
MHI	Ministry of Housing and Infrastructure
MLSA	Maldives Land and Survey Authority
MNDF	Maldives National Defense Force
MOFA	Ministry of Fisheries and Agriculture
MPA	Marine Protected Area
MPS	Maldives Police Service
MSL	Mean Sea Level
MVR	Maldivian Rufiyaa
NDMC	National Disaster Management Center
NGO	Non-Governmental Organisations
PV	Photo Voltaic
RWMC	Regional Waste Management Center
SOP	Standard Operating Procedures
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change
WMC	Waste Management Center

1 INTRODUCTION

1.1 BACKGROUND

CDE Consulting was contracted by Ministry of Environment and Energy to produce an Environmental Management Plan (EMP) for the Gaafu Dhaalu Hoadedhdhoo Waste Management Center (WMC). EMP is a tool that identifies the likely environmental impacts associated with a project and establishes a management framework to address the impacts.

This EMP is prepared to develop a framework to manage effectively, efficiently and ethically the environmental impacts of the WMC. The scope of this EMP covers both the construction and operation stage of WMC.

The Environment Protection and Preservation Act (EPPA 4/93) and National Waste Management Regulations (2013) provide the legal and regulatory framework for WMC development and operation in the Maldives. The Island Council will ensure that the construction process and operational activities undertaken at the WMC are in accordance with national legal and regulatory requirements. Island Council will also ensure that WMC operations are conducted according to any conditions enforced by the Environmental Protection Agency (EPA).

Protecting environmentally sensitive areas from project activities and prevention or minimization of damage to air, land, ecosystems, and groundwater is a priority of the EMP. Protecting human health and the human rights of people, in particular the poor and vulnerable groups, including foreign migrant workers is given due priority in the EMP.

1.2 PURPOSE OF EMP

The EMP has been prepared as a management tool to assist the Island Council to operate the WMC in accordance with national laws and international best practices. The EMP contains location specific actions that the Island Council can implement to ensure the WMC is managed in a sustainable manner. The EMP also provides direction for Council staff and employees of WMC on how to address environmental impacts associated with day-to-day activities of WMC.

The specific objectives of the EMP are to:

- Identify the Maldives government laws, regulations, policies, and guidelines applicable to the development and operation of the WMC financed by Ministry of Environment and Energy;
- Explore stakeholder values and opinions on WMC development and operation;
- Identify the key risks and impacts in WMC operation;
- Provide mitigation plans with preventive and corrective actions to address the likely adverse environmental impacts;
- Describe the institutional arrangements for managing environmental impacts;
- Provide a mechanism for consultation and disclosure of information; and address complaints and grievances;
- Ensure that environmental issues are monitored and communicated to the decision-makers.

1.3 METHODOLOGY

The methodology adopted for the preparation of the EMP included:

- Review of national environmental laws and policy guidelines;
- Review of relevant literature;
- Consultations with primary and secondary stakeholders;
- Visit to WMC location;
- Development of management tools; and
- Evaluation of proposed tools.

1.4 STRUCTURE OF EMP

The EMP is structured in the following order:

1. Legislative and regulatory requirements
2. Stakeholder values
3. WMC Description
4. WMC Location and Site
5. Biophysical Environment
6. Socio Economic Environment
7. WMC Operation
8. Resource Recovery and Recycling
9. Environmental Impact Mitigation
10. Social Sustainability
11. Environmental Approval Conditions
12. Environmental Monitoring
13. Reporting
14. Grievance Mechanism

This EMP first sets out the principles, laws, regulations, guidelines and procedures to assess the environmental and social impacts related to the WMC operation. It analyses the environmental and social policies and legal requirements of the Government of the Maldives.

The EMP then focuses on stakeholder values and concerns. The EMP identifies the environmental and social concerns that are important to the stakeholders and ensure the concerns are dealt with in a proper and efficient manner.

The EMP then describes the biophysical and social environment parameters relevant to the WMC. Next, the EMP describes the WMC operations and the waste management processes. The EMP outlines the measures that will be taken to prevent or correct the potential adverse environmental and social impacts, how to offset them, or reduce them to acceptable levels. It contains measures and plans to enhance positive impacts, provisions for budget and costs, and information on the agencies responsible for addressing project impacts. In addition, it identifies the monitoring and reporting needs for the WMC.

1.5 DOCUMENT CONTROL

A copy of the EPA Decision Note for WMC operation and a copy of this EMP shall be kept at the WMC as well as the Island Council at all times. The EMP shall be available for inspection and review by the public, EPA, MEE, and other relevant government officials.

Island Council shall ensure that all staff of the Council and WMC, and where relevant the sub-contractors at WMC, are familiar and informed about the relevant requirements in this EMP.

1.6 REVIEWS AND UPDATES

The Council has responsibility to review and update the EMP. The Council will update the EMP annually after review of the annual report to ensure that it reflects the facilities and operations at the WMC. Council shall include in the EMP any revisions and updates due to changes in regulatory requirements or due to changes in directives from EPA or the MEE.

2 LEGISLATION, POLICIES AND GUIDELINES

Activities carried out at WMC must comply with the relevant provisions of all legislation relating to the operation of the WMC. This includes but is not limited to the following:

2.1 CONSTITUTION OF THE MALDIVES

The constitution of the Maldives adopted in 2008 has several provisions to protect the rights of citizens to environment, health, and private property that are relevant to the establishment of the WMC. The relevant articles include:

Article 22: "The State has a fundamental duty to protect and preserve the natural environment, biodiversity, resources and beauty of the country for the benefit of present and future generations. The State shall undertake and promote desirable economic and social goals through ecologically balanced sustainable development and shall take measures necessary to foster conservation, prevent pollution, the extinction of any species and ecological degradation from any such goals."

Article 23: "Every citizen has the following rights pursuant to this Constitution, and the State undertakes to achieve the progressive realization of these rights by reasonable measures within its ability and resources:

(a) adequate and nutritious food and clean water;

(b) clothing and housing;

(c) good standards of health care, physical and mental;

(d) a healthy and ecologically balanced environment;

(e) equal access to means of communication, the State media, transportation facilities, and the natural resources of the country;

(f) the establishment of a sewage system of a reasonably adequate standard on every inhabited island;

(g) the establishment of an electricity system of a reasonably adequate standard on every inhabited island that is commensurate to that island."

Article 67: "The exercise and enjoyment of fundamental rights and freedoms is inseparable from the performance of responsibilities and duties, and it is the responsibility of every citizen: (h) to preserve and protect the natural environment, biodiversity, resources and beauty of the country and to abstain from all forms of pollution and ecological degradation;

Article 230 (a) The administrative divisions of the Maldives shall be administered decentrally.

Article 232: "The responsibilities of councils elected for decentralized administration shall include:

to provide democratic and accountable governance;

to foster the social and economic well-being and development of the community;

to establish a safe, healthy and ecologically diverse environment;

to achieve such other objects as prescribed by law.

Access to the court or other impartial and independent authority for the determination of the interest or right of a citizen, provision for payment of adequate compensation when a citizen is deprived of a right are all provisions that are relevant to the scope of activities in WMCs.

2.2 ENVIRONMENTAL ASSESSMENT

2.2.1 Environment Protection and Preservation Act

The Environmental Protection and Preservation Act (EPPA, Act No: 4/93) enacted on 19 March 1993 is the framework law related to environment protection in the Maldives. Articles 2, 4, 5, 6, 7, and 8 of the law are relevant to the WMC Project.

Article 2: concerned government authorities shall provide necessary guidelines and advise on environmental protection in accordance with prevailing conditions and needs of country.

Article 5 (a): An Environmental Impact Assessment study shall be submitted to the Ministry of Environment before implementing any development project that may have a potential impact on the environment.

5 (b): The Ministry of Environment shall formulate the guidelines for EIA and shall determine the projects that need such assessment as mentioned in paragraph (a) of this clause.

Article 6: the Ministry of Environment has the authority to terminate any project that has any undesirable impact on the environment. A project so terminated shall not receive any compensation.

The authority responsible for the Environment Act is the Ministry of Environment and Energy (MEE).

2.2.2 EIA regulations

Environmental Impact Assessment regulations were issued by MEE on 8 May 2012. The first step in environmental assessment process involves screening of the project to be classified as one that requires an EIA or not. Based on this decision, the Ministry then decides the scope of the EIA which is discussed with the proponent and the EIA consultants in a "scoping meeting". The consultants then undertake the EIA starting with baseline studies, impact prediction and finally reporting the findings with impact mitigation and monitoring programme. This report follows the principles and procedures for EIA outlined in the EIA regulations.

The EIA report is reviewed by MEE following which an EIA Decision Note is given to the proponent who will have to implement the Decision Note accordingly. As a condition of approval, appropriate environmental monitoring may be required and the proponent shall have to report monitoring data at required intervals to the Ministry. The project proponent is committed to implement all impact mitigation measures that are specified in this EMP. Furthermore, the proponent is committed to environmental monitoring and shall fulfil environmental monitoring requirements that may be specified in the decision note as a condition for project approval. The processes specified in this EMP are based on the EIA regulations.

2.2.3 Environmental Liability Regulation (Regulation 2011/R-9)

This law is pursuant to Article 22 of national constitution that states that protection, preservation and maintenance of the Maldivian natural environment, the richness of the living species, the natural resources and the beauty of the Maldives for the present generations as well as for the future generations is a basic obligation of the Maldivian government. The government shall enforce that the activities conducted in order to gain economic and social

development should be of sustainable nature that protect the environment and such activities shall not deteriorate the environment, endanger any species, damage the environment, and shall not waste any natural resources.

This regulation is also pursuant to Environment Protection and Preservation Act of Maldives (4/93). The regulation is aimed at maintaining equal standards for reprimanding and enforcing environmental liabilities, fines for those who violate the rules and regulations and give guidance to those who are involved in the implementation process of the regulations pursuant to Preservation Act of Maldives (4/93). One of the key objectives of the environmental liability regulation is also to practice polluter-pay-principles in the Maldives.

2.3 WASTE MANAGEMENT

2.3.1 Environment Protection and Preservation Act

According to **Article 7:** any type of waste, oil, poisonous gases or any substances that may have harmful effects on the environment shall not be disposed within the territory of the Maldives. In cases where the disposal of the substances becomes absolutely necessary, they shall be disposed only within the areas designated for the purpose by the government. If such waste is to be incinerated, appropriate precaution should be taken to avoid any harm to the health of the population.

Article 8 of the EPPA (4/93) states that Hazardous/ Toxic or Nuclear Wastes that is harmful to human health and the environment shall not be disposed anywhere within the territory of the country.

2.3.2 Decentralization Act

The Decentralization Act establishes the local councils as the highest political authority in the locality and who shall have executive powers to be exercised in accordance with the Act. The Act establishes Atoll Councils, Island Councils and City Councils.

Articles 24 (b) and 42 (b) of the Act mandate Island Councils and City Councils to provide adequate waste management services.

According to Article 23 (h), (i) and Article 41 (g), Island Councils and City Councils are responsible for release of land for development according to the provisions of the Land Act, the Land Use Plan of the island, and any guidelines issued by the Ministry responsible for land.

According to Articles 24 (e) and 42 (e) of the Decentralization Act provision of electricity, water, sewerage and other utility services in their jurisdictions according to the laws of the Maldives is the responsibility of Island Councils and City Councils respectively.

2.3.3 Waste Management Policy

The aim of the waste management policy is to formulate and implement guidelines and means for solid waste management in order to maintain a healthy environment. The key elements of the policy include:

Ensure safe disposal of solid waste and encourage recycling and reduction of waste generated;

Develop guidelines on waste management and disposal and advocate to enforce such guidelines through inter-sectoral collaboration;

Ensure safe disposal of chemical, hazardous and industrial waste.

The Island Council must be aware of the policy and all solid and hazardous waste brought to WMC should be disposed according to the EMP, which reflects the principles of the Waste Management Policy.

2.3.4 Waste Management Regulation

The Waste Management Regulation (WMR) put on gazette in August 2013 came into force in February 2014. EPA implements the WMR. The aim of WMR is to implement the national waste policy which contains specific provisions to (a) implement measures to minimize impacts on human health; (b) formulate and implement waste management standards; (c) implement an integrated framework for sustainable waste management (d) encourage waste minimization, reuse and recycling (e) implement Polluter Pays Principle; (f) introduce Extended Producer Responsibility.

WMR contains four main sections: (1) waste management standards; defines standards for waste collection, transfer, treatment, storage, waste site management, landfills and managing hazardous waste (2) waste management permits; defines approval procedures for waste sites (iii) waste transfer. Standards and permits required for waste transport on land and sea, including transboundary movements, (iv) reporting requirements: defines reporting and monitoring requirements and procedures (v) enforcement: defines procedures to implement WMR and penalties for non-compliance.

If any hazardous waste including electronic waste is to be disposed in the Maldives, waste sites specifically approved to manage hazardous and Special Category waste should handle it. Transportation and handling shall also conform to the standards specified in WMR. If the waste is to be exported for reuse or disposal in another country, an application needs to be submitted

to EPA 03 months prior to the shipping date. EPA will issue an approval based on compliance with WMR clauses and international conventions. Thus WMC shall comply with WMR in construction and operation activities.

2.3.5 National Policy on Health Care Waste Management

The "National Policy on Healthcare Waste Management" (2016) stipulates that all health facilities have to be responsible for the safe management of health care waste in an environmentally sound manner that minimizes risk to the community and the staff involved in its management. All health facilities are required to develop a Healthcare Waste Management Plan as part of an overall environmental management system, unless exempted by the responsible authority. The policy requires that quantities of hazardous health care waste and handling information be documented and reported to the relevant departments of MoH.

2.3.6 Export Import Act (31/79)

The exporting of items naturally formed and produced in the Maldives, importing items into the Maldives, re-exporting, selling of imported goods, and operation of such activity shall be carried out with the permission of the Ministry of Economic Development, and in accordance with the regulations made by the Ministry.

2.4 POLLUTION PREVENTION

2.4.1 General Guidelines for Domestic Wastewater Disposal

General Guidelines for Domestic Wastewater requires wastewater disposal to be undertaken with written consent of the Agency.

2.4.2 Environmental Guidelines for Concrete Batch Plants

The draft guideline prepared by Environmental Protection Agency of the Maldives is intended to help mitigate the adverse environmental impacts that may arise during the operation of concrete batch plants. Due to the highly alkaline wastewater, dust emissions, and noise from a concrete batch plant, certain environmental considerations are essential whilst operating the plant and they include the following;

- Location of the concrete batch plant: The plant should be located in an area that will not pose a hazard to the environment and the amenity of the local community. To protect amenity, a minimum buffer distance of 100 meters between batch plant and sensitive land uses should be maintained. Sensitive land uses include residential areas, hospital and school zones.
- Wastewater Management: All sources of wastewater should be paved. Wastewater should be pumped from the collection pit to a recycling tank and wastewater must be treated at a waste treatment facility licensed by EPA for this type of waste when the water level exceeds this tank. In addition, during both wet and dry weather, wastewater discharge should be monitored for pH, total suspended solids and turbidity and the records should be maintained.

- Air Quality: Natural or artificial wind barriers such as trees, fences and high raised walls could be used to control the emission of dust from the plant. Appropriate measures should also be taken during the delivery of sand and aggregates.
- Noise Emission: Adequate buffers should be used and operating times should be limited to between 0700hrs and 1800hrs.

- Solid Waste: Where possible concrete waste should be reused and preference should be given to waste avoidance or reduction. Waste generated by the batch plant can be kept outside for no more than 24hrs.

2.4.3 HCFC Regulation

HCFC Regulation (2010/R-19) was issued by the Ministry of Environment and Energy under the Environment Act (4/93). The regulation manages the HCFC usage and phase-out in line with the obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer. This regulation controls the importation, sale and usage of HCFC and HCFC blends.

2.5 GHG EMISSIONS AND RESOURCE EFFICIENCY

2.5.1 Maldives Energy Policy and Strategy

Maldives Energy Policy and Strategy (2016) consists of 5 key policy statements:

1. Strengthen the institutional and regulatory framework for the energy sector
2. Promote energy conservation and efficiency
3. Increase the share of renewable energy in the national energy mix
4. Improve the reliability and sustainability of electricity service and maintain universal access to electricity
5. Increase national energy security

2.5.2 Maldives Intended Nationally Determined Contribution

Maldives aims to achieve low emission development future and ensure energy security. In the Maldives INDC, the government has committed for the following Unconditional Reduction:

In accordance with Decisions 1/CP.19 and 1/CP.20, Maldives communicates that it intends to reduce unconditionally 10% of its Greenhouse Gases (below BAU) for the year 2030.

The Government has also communicated the following Conditional Reduction:
"The 10% reduction expressed above could be increased up to 24% in a conditional manner, in the context of sustainable development, supported and enabled by availability of financial resources, technology transfer and capacity building."

2.5.3 Second National Communication of Maldives to UNFCCC

According to the Second National Communication of Maldives to UNFCCC, the total GHG emission in 2011 was 1225.598 Gg CO2e, of which 1152.869 GgCO2e is from energy sector while 72.729 GgCO2e is from the waste sector.

The Second National Communication highlights improvements in waste management practices as a key to reducing methane emissions from waste sector.

2.5.4 National Water and Sewerage Policy

The National Water and Sewerage Policy (NWSP 2017) focuses on providing access to safe water and sewerage services for all. The NWSP has 9 goals: ensure access to safe water supply and adequate sewerage services; adopting cost-effective, environment friendly and appropriate technologies; strengthening legal framework; encourage private sector investments; building institutional capacity; maintain financial and environmental sustainability; strengthen advocacy and awareness; promote research and development; and protect and conserve water resources. Policy objective 9: calls for adopting a holistic approach to water resources protection, conservation, management, and pollution control. Among the strategies for objective 9 are: establish an effective research based monitoring program and information

platform for inhabited islands' water resources; develop and implement evidence based water resources management plans taking into consideration the sustainability and vulnerability of the island fresh water resources, wastewater reclamation, water reuse and minimize impact from pollution.

2.5.5 Dewatering Regulation (2013/R-1697)

This regulation is drafted under the Act number 4/93 (Maldives Environment Protection and Preservation Act) and issued on 31st December 2013. The main purpose of the regulation is to minimize the impact of dewatering activities on ground water table and also to decrease the impacts on the receiving environment of the disposed water. The regulation encourages prevention of contamination and damage to ground water table, protect the living organisms as well as the environment from the negative impacts due to dewatering activities. This regulation is enforced by EPA of the Maldives.

If dewatering is to be carried out for any development purposes in any of the islands in Maldives, it shall be done by gaining a written approval from the enforcing agency or an agency assigned by the enforcing body. However, dewatering done at individual level i.e., from a bore well or for the purpose of installing a bore well and water drawn for agricultural purposes are considered exceptions from the regulation.

Dewatering can only be to be carried out, after gaining approval by submitting "the dewatering approval form" in the annex 1 to the enforcing body for approval with all the required documents expressed and with an administrative fee of Rf500. Water quality tests results also have to be submitted as one of the required component.

The regulation also guides on where and how the extracted water shall be disposed of, and how it has to be handled. According to the regulation, permission can be granted for dewatering at

a stretch for a maximum of 28 days, for which a sum of Rf500 should be paid per day. This amount is liable to be increased with the number of days increased.

A fine not exceeding Rf100 million may be charged for violation.

2.5.6 Desalination Regulation

According to Desalination Regulation of the Maldives, all desalination plants operating in the Maldives catering for public water supplies and commercial purposes would have to be registered with EPA.

2.6 LAND ACQUISITION & HUMAN SETTLEMENT

2.6.1 Land Act

The Land Act (1/2002) governs the allocation of land for different purposes and uses and other issues regarding the issuing of land, and the sale, transfer and lease of Maldivian land.

The Act states that: All transactions concerning the issuing, receiving, owning, selling, lease, utilizing and using Maldivian land shall be conducted in compliance with this Act.

Policies concerning Maldivian land shall be decided by the President of the Maldives on the advice of the discussions in the Cabinet of Ministers. Under the Land Act several regulations have been formulated and include:

Issuing state dwellings regulation

Regulation governing the transfer of Land as a gift or by will

Lease of buildings and dwellings regulation

Mortgaging land, building and flats regulation

Registration of state dwelling and building regulation

Regulation on the inheritance of fixed assets on state dwellings

Transfer or transfer by will regulations (2004)

Privatization of state business land regulations (2006).

2.6.2 Land Use Planning Regulation

The Land Use Planning Regulations and Guidelines (2005) include land use instruments such as inclusionary zoning and quotas. Land use plans are prepared in consultation with the Ministry of Housing and Infrastructure, which does have allocations for residential areas as well as for different infrastructure and social needs.

2.6.3 General Laws Act (4/68)

The General Laws Act 4/68, Paragraph 7 stipulates that public property such as trees, coconut palms, farm land, households and such owned by public or private individuals, if required to be obtained by the Government, the property can be obtained by the High Court of the Maldives. The above shall be done only after the individual is fairly compensated for the property or by financial compensation proposed by the property holder. If the public property to be attained is a land plot or a household, the property holder shall be given adequate time for clearance of the area.

If a private property belonging to one individual creates nuisance to another, for issues in Male' the matter shall be resolved by the Ministry of Home Affairs and Housing or Ministry of Atolls and Development for issues arising in the islands.

2.7 BIODIVERSITY CONSERVATION

2.7.1 Environment Protection and Preservation Act

According to Article 4 Ministry of Environment shall be responsible for identifying protected areas and natural reserves and for drawing up the necessary rules and regulations for their protections and preservation.

2.7.2 Coral and sand mining regulation

Coral mining from house reef and atoll rim has been banned through a directive from President's Office dated 26 September 1990.

Regulation on sand mining covers sand mining from uninhabited islands that have been leased; sand mining from the coastal zone of other uninhabited islands; and aggregate mining from uninhabited islands that have been leased and from the coastal zone of other uninhabited islands.

Sand should not be mined from any part of the existing Island, beach or the newly reclaimed island beach. Sand should also not be mined from within 100 ft. of the shoreline. Please see regulation on dredging and reclamation for further controls.

2.7.3 Conservation of Old Trees Regulation

The contractors shall ensure that no old trees are felled in any island of the Maldives to be transferred to this project or for any need of this project.

2.7.4 Cutting down and export of trees and coconut palms

The Regulation on Cutting Down, Uprooting, Digging Out and Export of Trees and Palms from One Island to Another specifies that the cutting down, uprooting, digging out and export of trees and palms from one island to another can only be done if it is absolutely necessary and there is no other alternative. It further states that for every tree or palm removed in the Maldives two more should be planted and grown in the island.

The regulation prohibits the removal of the following tree types;

- The coastal vegetation growing around the islands extending to about 15 meters into the island
- All the trees and palms growing in mangrove and wetlands spreading to 15 meters of land area;
- All the trees that are in a Government designated protected areas;
- Trees that are being protected by the Government in order to protect species of animal/organisms that live in such trees; and
- Trees/palms that are abnormal in structure.

2.8 CULTURAL AND HISTORICAL PLACES AND OBJECTS ACT

The Law on Cultural and Historical Places and Objects of the Maldives (27/79) prohibits destroying or damaging any historical and cultural places, sites, objects and artefacts belonging to the sovereign area of the Maldives. The historical and cultural objects are those that were used by or feature the life of locals or foreign ancestors who had resided in the Maldives. The historical and cultural places refer to religious monuments, idols or place of worship or residences used by locals or foreign ancestors who had resided in the Maldives.

2.9 LABOUR AND WORKING CONDITIONS

2.9.1 Human Rights Act

In 2005, the Human Rights Commission Act was passed. The Act (6/2006) was subsequently amended in 2006 to ensure compliance with the Paris Principles on the status and functioning of national institutions for protection and promotion of human rights. The amended Human Rights Commission Act provides the HRCM independence and autonomy as a statutory body.

2.9.2 Employment Act

The legal framework to govern the rights and responsibilities of workers in the Maldives is included in the Employment Act (2/2008) that was ratified and signed into law in May 2008. The Employment Act provides for the creation of a Labour Relations Authority, an Employment Tribunal and an Advisory Board on wages. To date, four amendments have been brought to the Employment Act (2/2008). The amendments were made through the following Acts: 14/2008; 12/2010; 3/2014; 14/2015. Of these amendments, the third and fourth Amendments are directly relevant to foreign migrant workers in the Maldives.

The Amendment 3/2014 passed by Parliament on 03 December 2013 requires an employment approval for foreign migrant worker to be issued prior to arrival in the Maldives. The Amendment also made a deposit mandatory for all foreign migrant workers to be paid by the employer. The Amendment 14/2015 is on Ramazan allowance for Muslim workers. The Amendment makes it optional for employers of Muslim foreign migrant workers to pay them a Ramazan allowance.

2.9.3 Pensions Act

Article 12 of the Maldives Pensions Act (8/2009) introduced the Maldives Retirement Pension Scheme. It is mandatory for the private and public sectors as well as the self-employed to participate in the contributory Maldives Retirement Pension Scheme. The annual contribution each employee and employer has to make to the employees retirement savings account is set at seven per cent of pensionable wage for a total of 14 per cent.

2.9.4 Immigration Act

The Maldives Immigration Act (1/2007) lays down the rules for entry, departure and deportation of foreign nationals. Article 15 of the Act provides for work visa: the permit to remain in the Maldives for the duration of a work permit granted to a foreign national visiting the Maldives for the purpose of working, where a work permit has been obtained by that foreign national consistent with the regulations of the concerned Government authority.

2.9.5 Anti-Human Trafficking Act

The Anti-Human Trafficking Act (12/2013) passed by the parliament on 03 December 2013 and ratified on 08 December 2013 makes trafficking in persons a criminal offence in the Maldives. The purposes of the Act are to: prevent trafficking of persons through and across the Maldives; establish the crimes of trafficking in persons and prescribe punishments; provide for prosecution of perpetrators of trafficking in persons; provide protection and assistance to victims of human trafficking; promote and protect the human rights of trafficked victims; and engage with local and international NGOs working against human trafficking.

The Act defines the crimes of trafficking, exploitation, and debt bondage. According to this Act, forced labour and fraudulent recruitment are considered human trafficking. The Act

specifies the penalties for perpetrators of trafficking. The penalty for trafficking offence is a jail imprisonment up to 10 years that can be extended to 15 years if children are involved.

2.9.6 Work Visa Regulation

The Department of Immigration and Emigration has issued a Work Visa Regulation (2010/R-7) under the Maldives Immigration Act (1/2007). The Work Visa Regulation (2010/R-7) gazetted on 12 October 2010 requires foreign migrant workers who enter the Maldives for the purpose of work to have a valid work visa. The conditions for entry of work visa holders as specified in the regulation includes the following: a passport with minimum six months validity; security deposit paid to DoIE 48 hours before arrival; truthful answers to questions posed by Immigration Officers; not prohibited from entry to the Maldives under article 4 of the regulation; specification of the purpose of entry; an employment approval from the concerned authority with a copy transmitted to DoIE; and being over 18 years of age.

Documents and payments necessary for a work visa include: completed visa application form (IM25); passport standard photograph; original of the employment contract or contract copy attested by a court or law firm; original of the employment approval; passport with 6 months validity; MVR 250 for monthly visa fee; original of the medical report; MVR 50 for annual visa card fee; Employer's National Identity Card or Registration Certificate of Company; and medical insurance documentation.

2.9.7 Regulation on employment of foreign workers in the Maldives

Employment of foreign migrant workers is regulated by the Regulation on employment of foreign workers in the Maldives (2011/R-22) that was published on official gazette on 26 May 2011. This regulation is issued under Article 63 of Employment Act (2/2008) and Articles 32, 33 and 35 of the Maldives Immigration Act (1/2007).

The Regulation on employment of foreign workers in the Maldives (2011/R-22) requires employers to apply for a foreign worker quota; pay a security deposit for the foreign migrant worker; ensure that work permits are issued before a foreign migrant worker can commence work; apply for a work permit card within 15 days of arrival of the foreign migrant worker to the Maldives; apply for a work visa within 30 days of arrival of the foreign migrant worker to the Maldives; pay a work visa fee of MVR 250 per month; receive the foreign migrant worker at port of entry to the Maldives; register the foreign migrant worker at the registry maintained by the applicable island council or city council.

2.9.8 International labour related commitments

The Maldives is a party to major ILO conventions on fundamental labour rights. Maldives became the 183rd member state of the International Labour Organization (ILO) on 15 May 2009.

On 4 January 2013, the Government of the Maldives ratified the 8 core conventions on the ILO's fundamental labour rights: the Forced Labour Convention, 1930 (No. 29), the Abolition of Forced Labour Convention, 1957 (No. 105), the Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87), the Right to Organise and Collective Bargaining Convention, 1949 (No. 98), the Equal Remuneration Convention, 1951 (No. 100), the Discrimination (Employment and Occupation) Convention, 1958 (No. 111), the Minimum Age Convention, 1973 (No. 138), and the Worst Forms of Child Labour Convention, 1999 (No. 182).

There are three international standards that apply to foreign migrant workers. They are the ILO Migration for Employment Convention, 1949 (No. 97), the ILO Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143), and the 1990 1990 UN International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (CMW).

The ILO Convention 97 provides the foundation for equal treatment between nationals and regular migrants in areas such as recruitment procedures, living and working conditions, access to justice, tax and social security regulations. It sets out details for contract conditions, the participation of migrants in job training or promotion and offers provision for appeals against unjustified termination of employment or expulsion, and other measures to regulate the entire migration process.

ILO Convention 143 has two main objectives. First objective is to regulate migration flows, eliminate clandestine migration and combat trafficking and smuggling activities. The second objective is to facilitate integration of migrants in host societies. The convention contains minimum norms of protection applicable to migrants in irregular situation, or who were employed illegally, including in situations where they cannot be regularized. Article I established States to “respect the basic human rights of all migrant workers,” independent of their migratory status or legal situation in the host State.

In 1990, UN Member States adopted the United Nations (UN) Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (CMW). The CMW is recognized as the most comprehensive international instrument on the rights of migrant workers and it extended the legal framework for migration, treatment of migrants, and

prevention of exploitation and irregular migration. The CMW reaffirms and re-establishes the basic human rights norms that it considers necessary for migrant workers to have free and equal enjoyment of rights and dignity throughout all stages of labour migration. The above three Conventions (97, 143 and CMW) together provide a comprehensive basis for policy and practice regarding foreign migrant workers and their family members. The Maldives has not yet ratified these three conventions.

In 2002, the South Asian Association for Regional Cooperation (SAARC) adopted and signed the SAARC Convention on Prevention and Combating Trafficking in Women and Children. Under this Convention SAARC member states have established a regional taskforce to combat trafficking of women and children in South Asia.

2.10 HEALTH, SAFETY AND SECURITY

2.10.1 Building Act (4/2017)

The Building Act (4/2017) regulates construction of buildings and structures. It requires that all buildings and structures be constructed in accordance with the Act and after obtaining the required permits from the concerned authorities. The Act gives legal empowerment to the Maldives Building Code.

2.10.2 Maldives Building Code

The building code hand book of Maldives details the guidelines and standards that should be used for designing building in Maldives. All construction projects are required to meet the standards specified in the building code. All construction activities of the project will follow

the Building code. Construction waste and debris disposal must be undertaken in accordance with the requirements of the Building Code.

2.10.3 Public Health Protection Act (07/12)

The purpose of the public health protection act is to establish policies for protection of public health, identify persons responsible for protection of public health, define how public health protection policies will be implemented. The objectives of the Act also include: establishing policies to respond to public health emergencies; classify situations which may be harmful to health and establish methods to act in such a situation; establish roles and responsibilities of island, atoll, and city councils in protection of public health. Chapter 5 of the Public Health Protection Act covers identifying health hazards, eliminating risk, reporting health hazards, and orders on things to be done or not done in relation to a building.

2.10.4 Export Import Act (31/79)

Importing items into the Maldives, re-exporting, selling of imported goods, the exporting of items naturally formed and produced in the Maldives, and operation of such activity shall be carried out with the permission of the Ministry of Economic Development, and in accordance with the regulations made by the Ministry.

2.10.5 Substances Prohibited to be Brought into the Maldives Act (04/75)

The objective of Act (4/75) is to deal with substances that are prohibited to be imported unless for government purposes, or only to be imported with special permission, or materials which are completely prohibited from being imported into the country. Chemical substances are under import, use and manufacture control unless accompanied with a special permission from the Ministry of Defence and National Security. These include hazardous chemicals and

chemical based toxins that do not fall under the category of explosives, but may be used as substances for chemical weapons.

2.10.6 Pesticides Bill

Pesticides Bill has been drafted and sent to the Attorney General's Office by MOFA. The objective of the Bill is to manage pesticide use in the country at every stage of its chemical life cycle. The Bill will regulate the management of importation, manufacture, distribution, sale, use and disposal of pesticides with the aim of protecting human, animal and plant health, marine and terrestrial environment. The Ministry of Fisheries and Agriculture is the authority responsible for enforcement of the provisions and a Pesticide Unit is to be established.

3 STAKEHOLDER CONSULTATIONS

Maximizing stakeholder value is a key principle of responsible management. The successful implementation and management of the WMCs would require stakeholders adopting an approach such as 'Cradle-to-Cradle lifecycle approach for waste management. The Cradle-to-Cradle lifecycle approach is continuous with end products reintroduced into the lifecycle for reuse. Minimizing waste must be a key principle of responsible and ethical management. In the collection process, the waste going to the WMC would need to be segregated. At the WMC, waste would need to be further sorted for composting and recycling and re-introduced back into the lifecycle as products to be reused.

3.1 FRAMEWORK FOR CONSULTATION

To identify and assess significant issues for successful management and implementation of the WMCs, stakeholder consultations were conducted using the sustainability framework. The consultations were structured around the three fundamentals of sustainability – social performance, environmental performance and economic performance of the WMC. Governance is built in to the structure, as management of WMCs is imperative for successful implementation of the project. In this regard, the employees of the project, people's trust in the system, environmental resources, biodiversity and financial management of the waste sites were the key discussions around which the consultations were structured. The framework for the structure of consultation is presented below.

Table 3-1: Sustainability framework for stakeholder consultation

Environmental performance	Biodiversity around waste site, renewable energy, material inputs and outputs
Economic performance	Equipment & maintenance, financial management of project
Social performance	Employees of the project, trust in management of system
Governance	Procedures for functioning of WMC, willingness to pay, set up of WMC, management of WMC, monitoring of WMC

3.2 KEY STAKEHOLDERS

Prior to the start of consultations; the stakeholders were mapped using stakeholder mapping framework – internal stakeholders and external stakeholders. External stakeholders were further mapped as primary and secondary stakeholders. The internal stakeholders are the owners, employees and sponsors of the project. The primary stakeholders comprise of the users, buyers, regulators, suppliers, community and the media. The secondary stakeholders comprise the participants in broad economic sectors, society, environment and governance. The stakeholder framework and the identified stakeholders for the EMP are presented below.

Table 3-2 Stakeholder identification framework for EMP

Level	Category	Type	Stakeholder
Primary Stakeholders	*Owners:*	Island Councils	Elected councilors
			Secretariat staff
	Employees:	Waste sweeping	Maldivians
			Foreigners
		Waste collection	Maldivians
			Foreigners
		Waste burning	Maldivians
			Foreigners
	Sponsors	Finance	Ministry of Environment and Energy
			Ministry of Finance and Treasury
		Households	All households
		Businesses	Shops
			Café's & Restaurants
			Guesthouses
			Dhoni
			Service providers
		Institutions	Health Center
			Hospital
			Schools
	Buyers	Compost	Farmers
			Households
			Resorts
		Recyclables	PARLEY
			BEAM

			Secure Bag
	Regulators	Environment	EPA
		Waste	Waste Department
		Health waste	Health Protection Agency
		Tourism	Ministry of Tourism
		Waste to energy	Maldives Energy Authority
		Land	Land Survey Authority
	Suppliers	Electricity	Stelco
		Water	MWSC
		Sewerage	MWSC
		Construction material	
		Construction labour	
		Machinery	
		Vehicles	
		Materials	
	Community	Women	
		Men	
	Media	National TV	
		National Radio	
		National Newspapers	
		Local TV	
		Local Radio	
		Local Newspapers	
Secondary stakeholders	*Economy*	Tourism	Tourist resorts
			Guesthouses
			Dive and surf
			Café's and restaurants
		Fishermen	
		Farmers	
	Society	Future generations	Youth
			Children
		NGOs	
	Environment	Natural environment	Ministry of Environment
	Governance	Local Governance	LGA
			Atoll Council
		Parliament	MPs
		Judiciary/Courts	Island Courts

3.3 KEY FINDINGS OF STAKEHOLDER CONSULTATIONS

Stakeholder consultations were undertaken with relevant agencies in Male' and the stakeholders in the island. The team travelled to the island to undertake the consultation with stakeholders in the island. The sustainability framework was used to categorize the issues identified by the stakeholders. In order to maximize value for internal stakeholders, efficient use of capital and resources, successful implementation of the project and monitoring of the waste center are important. To maximize stakeholder value for external stakeholders, uninterrupted services, respect for worker's rights and sustainably managed waste centres are important. The table below presents the framework used for consultation, with topic of discussion, the issues related to the topic and the recommendations proposed to address the issues.

Table 3-3: Key concerns of stakeholders and relevant recommendations for EMP

Hoadedhdhoo Stakeholder Views			
	Topic	**Issues**	**Recommendation**
Environmental performance	Location of proposed WMC	The proposed location of WMC is an acceptable location for Hoadedhdhoo Island Council. According to Island Council, land was allocated about 2 years back for WMC construction but due to the issue of proximity to an environmentally sensitive area, the proposed location was changed and the project had been delayed by about 2 years. The Council expressed going ahead with any suitable location to speed up the process. Some members from the community discussed a location near the current waste landfill area suitable for a WMC with easy access to the	To establish an 'island resource shop' with reusable materials stored for easy purchase by visitors and where packaged items are ready for pick up by collection vessels.

		harbor for future collection vessels.	
	Clearance of vegetation and trees	The proposed WMC site and its surroundings cover rich vegetation with coconut palms, mature screw pine, and Portia trees. Screw pine are a special feature of the island according to the locals. On consultation with the Island Council, they informed that 20 coconut palms belonging to members of the public needs to be compensated. They also expressed that no screw pine trees will be lost in the process but some Portia trees within the boundary may have to be felled. There are also banana in the area planted by locals.	
	Existing waste management practice	Currently most households dispose waste on their own to the existing landfill area. Some households have outsourced waste disposal to foreign workers on the island for a fee of MVR 100 per month. Waste is sorted and dumped in the existing disposal area. - Food waste from households is dumped in to the sea near the harbor area as advised by the island council. - A composting pit has been established by an NGO on the island. Farming activities has been slowed down in the past 4 years but more active farming is planned to be undertaken from this year onwards according to the island council and green waste	

		is planned to be taken for composting. - Fiberglass waste from boat building is currently burnt on site. - Waste oil from powerhouse is disposed to the ground. When rainfall floods occur, oil leaks have been experienced. Households living in that area have raised the issue to island council. - Health care waste is disposed by the staff of Health Center. There is no working incinerator on the island. Hence health care waste is currently burnt on site on the ground. - Hoadedhdhoo accepts waste from the near by resort 'Amari Havodda'. The accepted wastes are cardboard, crushed glass, empty oil bottles and plastic waste. The Island Council charges a monthly fee of MVR 10,000 for transporting the resort waste from the island harbor to the dumpsite and managing the waste. They also expressed having offered the service to another resort in the past. But when terms and conditions were not followed (eg: glass bottles sent without crushing) the Council stopped offering the service.	
	Flooding (tidal and wave)	Hoadedhdhoo has experienced tidal waves about twice a year in the past. The Council shared experiencing one incident of tidal waves when it reached up to the center of the island. However, they expressed not having experienced tidal waves on the island in the past 3-4 years.	

	Flooding (rainfall)	Hoadedhdhoo is a flood prone island. Within about 6 hours of continuous rainfall, pumps are needed to drain water from the island. However, they expressed that the proposed WMC is not on a flood prone area. Muddy areas from previous days rain was noticed on the access road leading to the proposed WMC site.	
	Clean up of existing waste dumps	The existing waste disposal area is piled with recyclable materials and stored waste over time. Horizon Fisheries have been allocated land for fish processing on Hoadedhdhoo island. They have the vessels for waste collection from the waste dump area and transportation to Thilafushi. The Council has discussed with Horizon Fisheries to provide assistance in clearing the waste from the existing landfill (about 600 tons to 800 tons of waste).	
Economic performance	User fee	According to Island Council, households are at present not charged a fee for waste management services. Households manage waste collection by themselves. However, in future with the new WMC, if an outsourced group provides waste collection and management service, willingness to pay can be assessed. The island council has not officially discussed the topic of fees with the community but after some preliminary estimates they have arrived at a figure of MVR 150 per household and higher for business establishments on the island.	

	Equipment and vehicle	Equipment and vehicle for waste collection and management is not part of the current scope of WMC construction. However, through a waste project by the island NGO, a waste collection vehicle of 1.2 tons has been purchased. The Council understands that proper safety gear would be needed for workers on the site.	
	Compensation for property	There are 20 coconut palms of private ownership that needs to be compensated for. The negotiations for compensation are on going at the moment.	
Social performance	Public acceptance	All stakeholders welcome the project and are supportive.	The results of the project shall be sustainable; otherwise there is risk of losing public and stakeholder confidence and trust.
	Resettlement	No issues	
	Land acquisition	No private land acquisition issues. Proposed WMC site is a public land.	
	Employment	WMC construction has not commenced yet and work has not been contracted out. No employees have been recruited yet.	It is important to help build the capacity of the Council to undertake waste management operations.
	Wages	WMC management fees and wages have not been finalized. But it is estimated that 4 workers and a supervisor would be employed for waste management.	It is important to follow laws and regulations of the Maldives and follow best practices in worker recruitment and in establishing work procedures respecting their rights and establishing proper health and safety
	Work hours	Work hours have not been finalized yet.	
	Work condition	The work conditions were discussed in the meetings. However, the procedures have not been established yet.	

	Occupational health and safety	This was discussed in the meeting with reference to proper safety gear. However, the procedures have not been established yet.	procedures for workers. The workers also need to be trained on all aspects of WMC operations for sustainable and smooth operations.
	Training of staff	Training would be needed and a local supervisor would supervise the process.	
	Communication with staff	No staff employed at the moment.	
	Public awareness	According to Island Council, Hoadedhoo community is aware of the land allocated for the new WMC construction. Some procedures for waste disposal have been established for the existing site. However, Island Council has not conducted awareness sessions with the households for waste management practices.	For successful implementation and sustainable waste management practices, it is important to educate the community and create awareness on the rules and procedures to be followed.
Governance	Waste management plan	Island Council has prepared a waste management plan for the island.	
	Proposed procedures and process	According to Island Council, they have prepared guidelines for the existing waste landfill practices and have been communicated with all households. But new procedures need to be established for the new WMC and its procedures.	
	Waste collection process	Waste collection process for the new WMC has not been finalized yet.	
	Cultural, historic or religious sites	No such areas have been identified in the allocated site. The island has one heritage site previously used as a mosque.	
	Access road	Access road present but would need to be leveled and filled to prevent flooding and for smooth vehicle movement.	
	Access to electricity	No access to electricity in the allocated area yet. About a	

		450 feet power cable needs to be established. The Island Council would be taking responsibility for establishing power cables to the WMC site.	
	WMC operation responsibility	Island Council has not yet finalized the operations responsibility aspects. But have considered outsourcing to the island NGO with monitoring arrangements by the Council.	
	Public disclosure	No official system has been designed. But people can walk in or call the Island Council to lodge complaints.	
	Enforcement of regulations	The Island Council highlighted that the waste management procedures need to be developed and adopted for enforcement.	
	Grievance mechanism	No system designed. But current practice is to lodge official complaints through a letter.	

3.4 ISSUES IDENTIFIED & RECOMMENDATIONS

The newly proposed WMC is located in close proximity to a biodiversity rich area with mangroves, mature screw pine and important vegetation. The island council is open to building the WMC in any location proposed by the MEE out of need for a waste management mechanism in the island. However, some people expressed other locations near the existing waste dumpsite that might be more convenient for functionality of the WMC. According to the Island Council, the area adjacent to the existing waste disposal area has been allocated for tourism in the future. Nonetheless, it is important to consider establishing an Island Resource Center, possibly near the harbor for people to purchase reusable materials and for easy collection of recyclables for the collector vessels.

Hoadedhoo is a farming island. A composting site has already been designed by the island NGO and is in use within the farming area. It's is proposed to have consultations among the Island Council, NGOs and famers to consider relocating the new compost pit to the existing composting area in the farmlands within closer proximity to the users for a sustainable and effective system.

On inspection, it was observed that Expanded Polystyrene boxes were used for crushed glass transportation from the nearby resorts to the island waste landfill. The boxes were broken and glass spread on the ground. It is important to store reusable materials in packaging safe for storage and disposal and in easy form for transportation. Hence it is proposed to establish right packaging guidelines and packaging materials for storing and transport of reusable materials.

The island community expressed that screw pine trees is an important identity of the island. It should be assured that during the construction process of the WMC, screw pine trees around the WMC are protected and could be used by the people during the operations of the WMC.

3.5 FUTURE CONSULTATIONS

It is recommended that comprehensive community consultations with the farmers and households be conducted to come to an understanding on a collaborative mechanism for waste management on the island. It is also recommended that waste disposal regulations be communicated with households and businesses, especially guesthouses and cafes in the island. Furthermore, awareness sessions on sustainable waste management practices shall be conducted with all the stakeholders. There is a need for dialogue on waste management processes that would be adopted on the island. Community leaders, particularly women's groups need to be consulted on the waste management procedures and the user fees amounts to be set.

4 WMC DESCRIPTION

4.1 PROJECT TITLE

Project title is: “Construction and Operation of Island Waste Management Center in Gaafu Dhaalu Hoadedhdhoo”.

4.2 PROJECT PROPONENT

The proponent of this project is Ministry of Environment and Energy (MEE) on behalf of Hoadedhdhoo Island Council. MEE is financing the project.

The address and contact information of the proponent are as follows:

Ministry of Environment and Energy
Green Building,
Handhuvaree Hingun,
Maafannu,
Male',
Maldives
Tel: (+960) 3018434
Email:

The implementing agency for the Project is:

Hodedhdhoo Island Council
Gaafu Dhaalu Hoadedhdhoo
Tel: +960 684-0015
Fax: +960 6840015
Mobile: +960 9660015
Email: info@gdhhc.gov.mv

4.3 WASTE MANAGEMENT CENTER

The WMC is aimed at addressing the solid waste management problem faced by the island community of Hoadedhdhoo. For waste management at island level, the establishment of an island WMC is a prerequisite as identified in the National Waste Management Policy 2015.

The WMC design and construction has to meet regulatory requirements stipulated in the Solid Waste Regulation 2012.

The WMC will be constructed with financial assistance from the Ministry of Environment and Energy and will be built on a location approved by EPA, MEE and MLSA.

4.4 WASTE QUANTITY AND SOURCES

Hoadedhdhoo has a residential population of 861 according to the latest Census 2014. The number of households in 2017 was 178 and the average size of household is 5 persons. Hoadedhdhoo has a total land area of 92.7 hectares. Assuming that 0.8kg of waste is generated per person per day, it is estimated that 0.69 tonnes of waste is generated daily in Hoadedhdhoo that requires disposal. Hence, it is anticipated that more than 250 tonnes of waste will need to be managed by WMC on an annual basis. The predominant source of waste in Hoadedhdhoo is domestic municipal waste. It is anticipated that only household waste will be disposed at the WMC. This is following the regional approach to the management of waste whereby recyclables and residual waste from island WMC will be taken to a regional WMC for resource recovery and processing.

The most significant economic activity on the island is agriculture. Chemicals and fertilizers used for agriculture are not adequately monitored. There are substantial commercial activities planned for in Hoadedhdhoo. The most significant of these is the Fisheries Complex. Land was allocated more than 15 years ago to develop a cold storage in the Fisheries Complex. The island has a fiber works area where boats are built. The fiber waste is burnt on site.

4.5 TYPES OF WASTE

Of the total waste generated in the island, 66% is considered compostable, 12.5% is recyclable and 21.4% is likely to need incineration. The recyclable component consists of glass, plastic, metals and paper & cardboard.

4.6 WASTE GROWTH

The population growth in Hoadedhdhoo is steady. Over the last 40 years, the resident population of Hoadedhdhoo had doubled. According to Census data, the population of Hoadedhdhoo was 428 in 1977 and it had reached 861 in 2014. With the population growth, lifestyle changes, and income growth the amount of waste generated in Hoadedhdhoo has increased significantly over the last 40 years. With the planned economic activities and the lifestyle trends, the quantity of waste generated is likely to increase in the future.

4.7 DESIGN AND ENGINEERING CONSULTANTS

Ministry of Environment and Energy has developed the design criteria and technical specifications for the new WMC. The drawings for WMC were prepared by Ministry of Environment and Energy.

4.8 EMP CONSULTANT

CDE Consulting (www.cde.com.mv) undertook all the EMP related work for the project. The team of consultants who contributed to this EMP are:

Dr. Ahmed Shaig (EIA Consultant)

Dr. Simad Saeed (Environment Consultant)

Ms. Nashiya Saeed (Social and Economic Assessment)

Ms. Aminath Inan Abdul Muhsin (Report compilation)

Mr. Ali Nishaman (Terrestrial Environment Consultant)

5 WMC LOCATION AND SITE

5.1 LOCATION

The proposed WMC site is located approximately 85m~ inland from the western shoreline of Hoadehdhoo on the southern half of the island and adjacent to an existing road. The entire site covers an area of approximately 700m^2.

Figure 5-1 Location of the WMC

5.2 OWNERSHIP

The land where WMC is located is State owned.

5.3 LAND USE PLANNING AND ZONING

There is a Land Use Plan (LUP) prepared for the island. The Island Council allocated land for this project in accordance with the government procedures. Several consultations with relevant agencies of the Government were conducted before finalizing the location of WMC.

5.4 FACILITIES AND SERVICES

The main equipment that will be used in the WMC are the glass crusher, plastic shredder, metal baler, vegetation chipper and compost facility. Details of the WMC equipment are detailed in Tables below.

Table 5-1: Details of Glass to Sand Crusher

#	Feature	Requirement
General Information		
1	Crushing Time	0.5 to 1.0 tonne/hour
2	Crushing Ratio	Maximum output grain not more than 0.5mm in diameter
3	Motor	2 to 5 HP
4	Standard Electrical Power	3 Phase electrical, 400V AC, 50Hz
Glass Crusher Dimensions and Weight		
5	Feeder Hopper	Measurement of Feeder mouth diagonal measurement not less than 300mm
Other Specifications		
6	Control	Should have an automatic cut off switch
7	Seal	Air tight seal when feeding the machine and when transferring the crushed material to the collection container

Table 5-2: Details of Plastic Shredder

#	Feature	Requirement
General Information		
1	Motor	3 to 5 HP
2	Standard Electrical Power	3 Phase electrical, 400V AC, 50Hz
4	Type of Plastic	**Can shred all types of plastic**
5	Input Size	Capable of shredding plastic material of dimension not less than 600mm during continuous feed operations;
	Shredding Ratio	Largest dimension of output material not more than 10mm
6	Shredding Blade Material	Blades should have a lifetime not less than 5 years and be made of corrosion resistant material
7	Output of Plastic Material	30 – 100 kg per hour
Other Specifications		
8	Safety Measures	"hands free" cutting operation for all plastics and dust curtain fitted at the feed hopper and the discharge
	Control	Should have an automatic cut off switch

Table 5-3: Details of Metal Baler

#	Feature	Requirement
General Information		
1	Motor	3 to 5 HP
2	Standard Electrical Power	3 Phase electrical, 400V AC, 50Hz
4	Type of Metal	**Can compact and bale all types of metal**
5	Compaction Compartment Size	Inside volume of feeder not less than 2 square meters
	Bale Tying	Bale tying material readily available in the country
	Bale Ejection	Hydraulic
Other Specifications		
8	Safety Measures	Hands free compacting operation for all metals
	Control	Should have an automatic cut off switch

Table 5-4: Details of Vegetation shredder/ Chipper

#	Feature	Requirement
General Specifications		
1	Details	Supplied new. Petrol/diesel driven mobile multi vegetation shredder/chipper (leaf and wood etc.) similar to that offered by Hansa (C21), Ducar 15HP, Echo bearcat (SC5720b) etc. Similar products offered by other manufactures will be considered without prejudice.
2	Engine	15 -20 HP 4 stroke air cooled petrol engine (Brigs and Stratton/ Kolher/Honda etc or similar) with Manual- or Electric-Start. Diesel equivalent maybe offered.
	Control	Should have an automatic cut off switch
4	Chipping Capacity	100-130mm chipping capacity (approx.)
5	Chipping Method	Blade or disc with hammer operating action
7	Body	heavy duty welded structural steel
9	Mount	Self-mounted or trailer mounted with inflatable tyres
10	Paint and Finish	Painted with primers and powder / epoxy finish to all exposed surfaces

Table 5-5: Details of Manual Rotary Compost Screen

#	Feature	Requirement
1	Power	Manual
2	Drum Diameter	1000 to 1500 mm
3	Screen Size	10x10mm with 7x7mm supplied sieve insert
4	Rotation	Manual rotation
5	Collection of Material	Allows easy collection of material in a removable tray
6	Body	heavy duty welded structural steel
7	Mount	Self-mounted

The main facilities of the WMC are:

Sorting platform
Equipment room
Stockpile area for metals, plastics, paper/cardboards, glass.
Compost pad for organic waste
Hazardous waste storage room
Leachate collection tank
Ground water pump hut.

5.5 SITE HISTORY

The site was allocated for WMC in 2017. Prior land use was for agriculture. There is evidence of previous agriculture with banana and coconut palms in the area.

5.6 NEAREST SENSITIVE LAND USE

Hoadedhdhoo has a low population density and there are no residential houses near the WMC. The nearest sensitive environmental areas are wetlands that are located in the vicinity of WMC.

5.7 NEIGHBOURING LAND USES

The neighboring land use is for agriculture.

5.8 SITE ACCESS

There is road access to the WMC. The design of the WMC does not require any additional road access to the site.

5.9 LAND USE CONSENT

The MHI and EPA has provided consent for WMC land use.

5.10 LICENSE TO CONSTRUCT AND OPERATE WMC

The Island Council is requesting to get license to operate the WMC based on this EMP. The WMC will require a Decision Note from the Environment Protection Agency to operate. A copy of the Decision Note shall be annexed to this document.

5.11 DURATION AND SCHEDULING OF PROJECT ACTIVITIES

Mobilisation for the project will begin after the EMP is approved and once the contractor has been identified. It is anticipated that the completion of the whole project will take approximately 3 months from the date of approval.

5.12 INPUTS AND OUTPUTS

The types of materials that will go into the development and from where and how this will be obtained are given in Table 9 and 10.

Table 5-6: Major project inputs

Input resource(s)	Source/Type	How to obtain resources
Construction stage		
Construction workers	Local and foreign	Contractor's employees or recruited etc.
Engineers and Site supervisors	Local and foreign	Contractor's employees or by announcement
Construction material	Light weight concrete blocks, reinforcement steel bars, sand, cement, aggregates, PVC conduits, floor and wall tiles, calcium silicate boards, zinc coated corrugated metal roof, paint, varnish, lacquer, thinner...etc	Import and purchase where locally available at competitive prices – Main Contractor's responsibility.
Water supply (during construction)	Bottled water, ground water and rain water	Locally available sources, Purchased from local businesses;
Machinery	Excavators, loaders, trucks, concrete mixers, etc	Contractor's machinery or hire locally where available
Maintenance material	Maintenance parts and fluids required for the machinery and piping.	Import or purchase locally where available

Input resource(s)	Source/Type	How to obtain resources
Construction stage		
Accommodation	Existing houses in the island	Locally rented
Firefighting equipment	Fire Extinguishers...etc.	Contractor's equipment
Fuel	Light Diesel, LPG Gas, Petrol, Lubricants	Local suppliers
Telecommunication	Mobile phones and internet facilities	Contractor's responsibility
Food and beverage bottles	PET bottles, glass bottles, packaging waste, plastic bags and various frozen, packaged and fresh food.	Contractor's responsibility
Operations stage		
Electricity supply	Diesel. From the island grid	Local power supply system and
Operational staff	Local and Foreign. Approximately 4	Recruited by the island council

Table 5-7: Major project outputs

Products and waste materials	Anticipated quantities	Method of disposal
Construction stage		
Excavated earth	Minor quantity	Reused
Construction waste	Moderate quantity	Disposed to the island waste site
Waste oil	Small quantities	Barrelled and sent to regional waste management site during demobilisation.
Hazardous waste (diesel)	Small quantities	Barrelled and sent to regional waste management site during demobilisation.
Noise	Only localised	Excavator and truck operation will be noisy. No option available.
Food waste	Small quantities	Managed under existing waste management system of the island.
Plastic and packaging wastes	Small quantities	Managed under existing waste management system of the island, dumped to the existing waste
Operation stage		
Compost	Large quantities 343 kg per day	Sold or used as fertilizers

Glass	10 kg per day	Crushed and stored
Plastic waste	28 kg per day	Crushed and stored
Cardboard waste	22 kg per day	Stored
Steel	5 kg per day	Stored in the segregation slot.

5.13 WORK SCHEDULE

Table 5-8 Work schedule provided by the proponent

Activity	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Mobilization						
Site Clearance						
Civil Works						
Demobilization						

5.14 SITE SETUP

No special equipment or materials are planned to be used for construction. Standard building and construction material will be used. All site mobilization and construction related activities will be undertaken in a planned manner. A temporary site office and necessary facilities for preparatory works will be constructed at the location of the project plot given for WMC.

6 BIOPHYSICAL ENVIRONMENT

6.1 CLIMATE AND METEOROLOGY

The climate in the island is warm and humid, typical of the tropics. The average temperature ranges between 25°C to 30°C and relative humidity varies from 73 percent to 85 percent. The annual average rainfall is approximately 1,948 mm. The island receives plenty of sunshine throughout the year. On average the island is expected to receive 2704 hours of sunshine each year. Table 6 provides a summary of key meteorological findings for Maldives that is applicable for the project location.

Table 6-1: Key meteorological parameters for Maldives

Parameter	**Data**
Average Rainfall	9.1mm/day in May, November; 1.1mm/day in February
Maximum Rainfall	184.5 mm/day in October 1994
Average air temperature	30.0 C in November 1973; 31.7 C in April
Extreme Air Temperature	34.1 C in April 1973;17.2 C in April 1978
Average wind speed	3.7 m/s in March; 5.7 m/s in January, June
Maximum wind speed	W 31.9 m/s in November 1978
Average air pressure	1012 mb in December; 1010 mb in April

The climate of project location is characterised by the monsoons of the Indian Ocean. Monsoon wind reversal significantly affects weather patterns. Two monsoon seasons are observed: the Northeast (Iruvai) and the Southwest (Hulhangu) monsoon. The parameters that best distinguish the two monsoons are wind and rainfall patterns. The southwest monsoon is the rainy season while the northeast monsoon is the dry season. The southwest monsoon occurs from May to September and the northeast monsoon is from December to February. The transition period of southwest monsoon occurs between March and April while that of northeast monsoon occurs from October to November.

Winds

The winds that occur are mostly determined by the monsoon seasons. The two monsoons are considered mild given that the location is close to the equator. As a result, strong winds and gales are infrequent although storms and line squalls can occur, usually in the period May to July. During stormy conditions gusts of up to 60 knots have been recorded at Male'.

Wind has been uniform in speed and direction over the past twenty-plus monsoon seasons in the Maldives (Naseer, 2003). Wind speed is usually higher in central region of Maldives during both monsoons, with a maximum wind speed recorded at 18 ms-1 for the period 1975 to 2001. Mean wind speed is highest during the months May and October in the central region.

Besides the annual monsoonal wind variations there are occasional tropical climatic disturbances (tropical storms or low intensity tropical cyclones) in the central region which increases wind speeds up to 110 km/h, precipitation to 30 to 40 cm over a 24 hour period and storm surges up to 3 m in open ocean (UNDP, 2006).

Table 6.2 summarizes the wind conditions in central Maldives throughout a year. Medium term meteorological data from Hulhule Meteorological Centre (see Figure 6.1, Figure 6.2 and Figure 6.3) and findings from long-term Comprehensive Ocean-Atmosphere Data Set (COADS) are used in this analysis.

Table 6-2: Summary of General Wind Conditions from National Meteorological Centre

Season	**Month**	**Wind**
NE - Monsoon	December	Predominantly from NW-NE. High Speeds from W
	January	
	February	
Transition Period 1	March	From all directions. Mainly W. High Speeds from W.
	April	
SW - Monsoon	May	Mainly from W. High Speeds from W.
	June	
	July	
	August	
	September	
Transition Period 2	October	Mainly from W. High Speeds from W
	November	

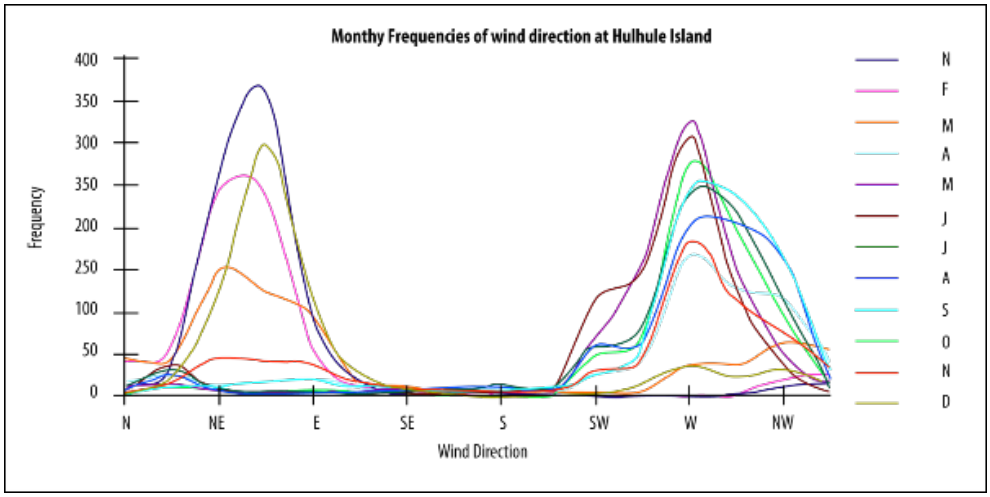

Figure 6-1: Monthly Frequencies of Wind Direction in Central Maldives based on National Meteorological Center 10 year Data (adapted from Naseer, 2003).

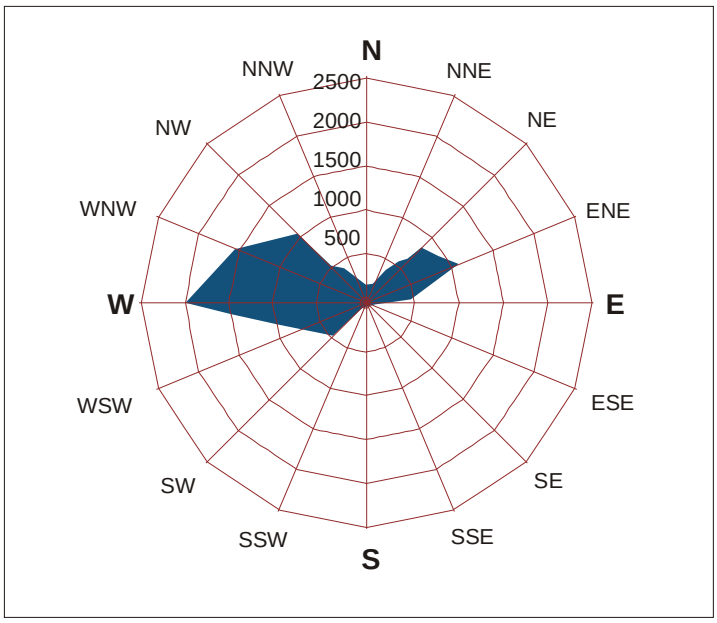

Figure 6-2: 24 Year Wind Frequency Recorded at National Meteorological Center.

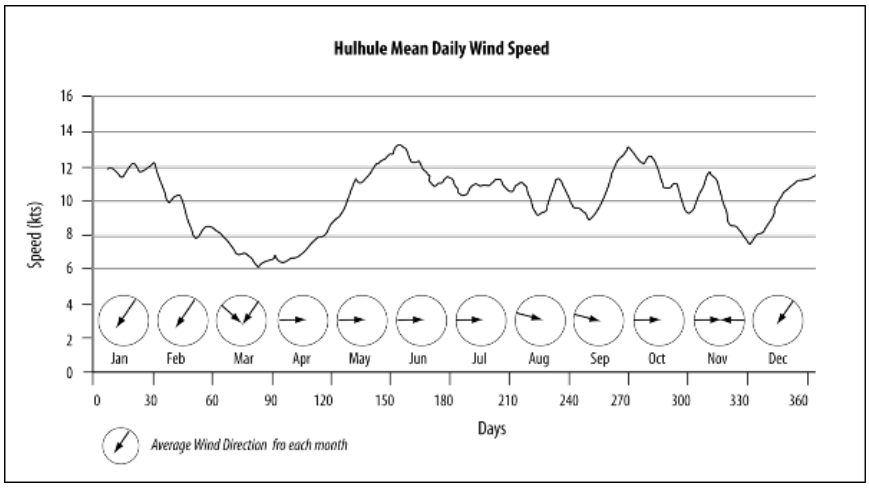

Figure 6-3: Mean Daily Wind Speed and Direction Recorded at National Meteorological Centre (1978 – 2004)

The Disaster Risk Profile of Maldives (UNDP, 1006) reports 11 cyclonic events over the Maldives in the last 128 years and only one event over the central Maldives. All of these events were of category 1 cyclones. There have been no cyclonic events since 1993.

The island is located in a moderate risk cyclonic hazard zones (UNDP, 2006). The WMC site is expected to receive regular annual strong winds during the peak SW monsoon.

Rainfall

The average annual rainfall for the Maldives is 2,124 mm. Mean monthly rainfall varies substantially throughout the year with the dry season getting considerably less rainfall. The proportions of flood and drought years are relatively small throughout the archipelago, (UNDP, 2006).

The mean annual rainfall in Hulhule' is 1991.5 mm with a Standard Deviation of 316.4 mm and the mean monthly rainfall is 191.6 mm. Rainfall varies throughout the year with mean highest rainfall during October, December and May and lowest between February and April (See Figure 6.4).

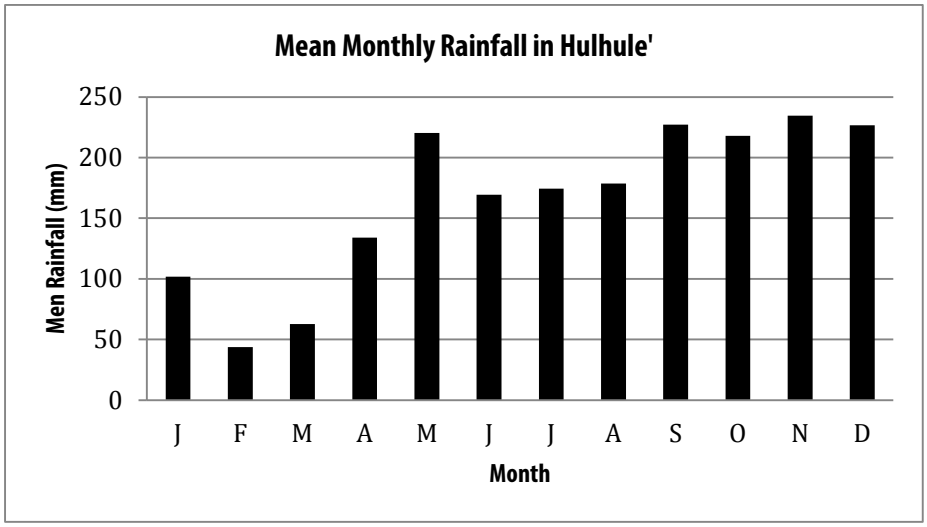

Figure 6-4: Mean Monthly Rainfall in Hulhule' (1975-2004)

Analysis of daily maximum annual rainfall data shows high variability, including extremes (see Figure 6.5). However, no significant long term trends are evident in the Hulhule data.

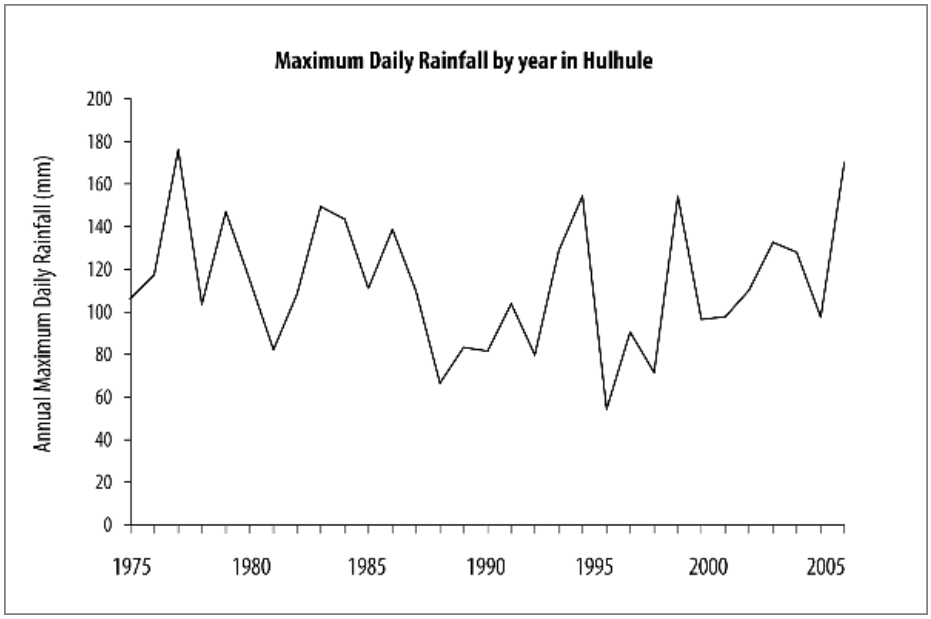

Figure 6-5: Maximum daily rainfall by year in Hulhule' (1975-2005) - (Source: Hay, 2006)

The probable maximum precipitations predicted for Hulhule' by UNDP (2006) are shown in Table 13.

Table 6-3: Probable Maximum Precipitation for various Return periods in Hulhule'

Station	**Return Period**			
	50 year	100 year	200 year	500 year
Hulhule'	187.4	203.6	219.8	241.1

Source (UNDP, 2006)

Temperature

Daily temperatures of Maldives vary little throughout the year with a mean annual temperature of 28°C. The annual mean maximum temperature recorded for Male' during the period 1967-1995 was 30.4°C and the annual mean minimum temperature for the same period was 25.7°C. The highest recorded temperature for Male' was 34.1°C on 16th and 28th of April 1973. The hottest month recorded was April 1975 with a maximum monthly average temperature of

32.7°C, the next highest being 32.6°C in April 1998. The lowest minimum average temperature of 23.7°C was recorded in July 1992.

There is considerable inter annual variability in extreme temperatures for Hulhule as shown in Figure 6.6. A maximum temperature of at least 33.5°C is rare at Hulhule and has a return period of 20 years (Hay, 2006).

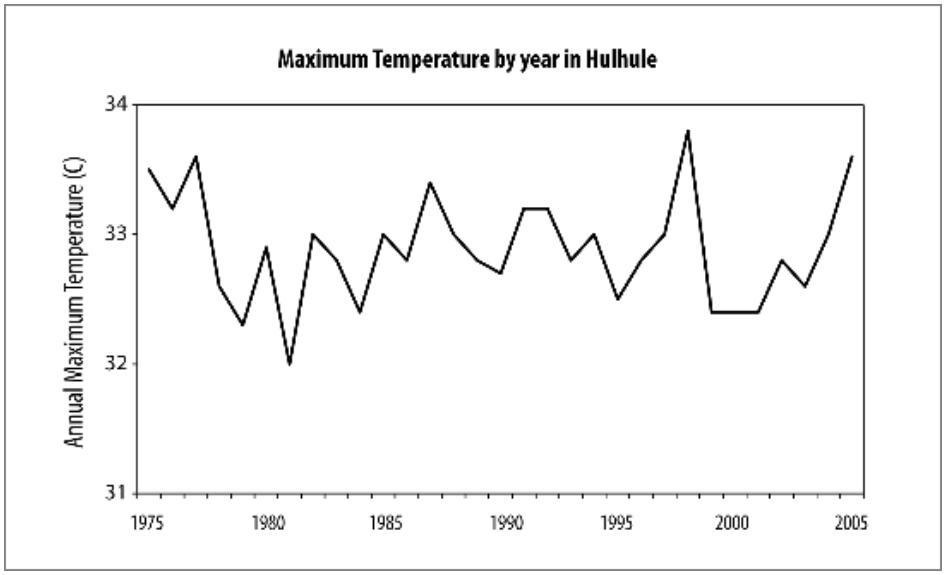

Figure 6-6: Maximum Temperature by year in Hulhule'- 1975-2005 (Source: Hay, 2006)

Tidal Pattern

Tides in the Maldives are mixed and semi-diurnal/diurnal. Water levels at the site vary mainly in response to tides, storm surge or tsunamis. Tidal variations are referred to the standard station at Hulhulé. Typical spring and neap tidal ranges are approximately 1.0 m and 0.3 m, respectively (MEC, 2004). Maximum spring tidal range in Hulhulé is approximately 1.1 m. There is also a 0.2 m seasonal fluctuation in regional mean sea level, with an increase of about 0.1 m during February to April and a decrease of 0.1 m during September to November. Table 6.4 summarizes the tidal elevations reported at Hulhulé, which is representative of tidal conditions at the project site.

Table 6-4: Tidal Variations at Hulhule International Airport

Tide Level	Referred to Mean Sea level
Highest Astronomical Tide (HAT)	+0.64
Mean Higher High Water (MHHW)	+0.34
Mean Lower High Water (MLHW)	+0.14
Mean Sea Level (MSL)	0.00
Mean Higher Low Water (MHLW)	-0.16
Mean Lower Low Water (MHLW)	-0.36
Lowest Astronomical Tide (LAT)	-0.56

Waves

There are two major types of waves observed along the islands of Maldives. The first type is wave generated by local monsoon wind with a period of 3-8 seconds and the second type is swells generated by distance storms with a period of 14-20 seconds [Kench et. al (2006), DHI (1999), Binnie Black & Veatch (2000), Lanka Hydraulics (1988a & 1998b)]. The local monsoon predominantly generates wind waves, which are typically strongest during April-July in the southwest monsoon period. Wave data for Male and Hulhulé' between June 1988 and January 1990 (Lanka Hydraulics 1988a & 1998b) shows that the maximum significant wave height (Hs) recorded for June was 1.23 m with a mean period (Tm) of 7.53s. The maximum recorded Hs for July was 1.51 m with a Tm of 7.74s. The mean wave periods were 5.0 – 9.0s and the peak wave periods were within 8.0 – 13.0s.

Maldives experiences occasional flooding caused by long distance swell waves that are generated by South Indian Ocean storms (Goda 1988). The swell waves of height 3 meters that flooded Male' and Hulhulé in 1987 are said to have originated from a low pressure system off west coast of Australia. In addition, Maldives has been subject to an earthquake-generated tsunami reaching heights of 4.0m on land (UNEP, 2005). Historical wave data from Indian

Ocean countries show that tsunamis have occurred in more than 1 occasion, most notable has been the 1883 tsunami resulting from the volcanic explosion of Karakatoa (Choi et al., 2003).

Swell Waves and Storm Surges

Waves studies around Maldives have identified the presence of swell waves approaching predominantly from a southwest to a southerly direction Kench et. al (2006), Young (1999), DHI(1999), Binnie Black & Veatch (2000) and Naseer (2003).

Waves generated from abnormal events could also travel against the predominant swell propagation patterns (Goda, 1998), causing flooding on the eastern and southern islands of Maldives (UNDP, 2009).

The island is located in a moderate risk cyclonic hazard zone. It has the potential for a 1.8 m storm tide in a 500 year return period (UNDP, 2006).

6.2 FLORA AND FAUNA

Terrestrial assessments were carried out on 23rd January 2018, and the weather conditions during this period are shown in Table 6.5 below.

Table 6-5 Weather conditions during the field survey period

Factors	23/01/2018, 12:00PM
General:	Light rain / Overcast
Temperature:	28 ºC
Wind (Direction):	E
Wind (Speed):	5 km/h
Humidity:	75%

6.2.1 Flora

Due to the small scale of the site, there are no natural vegetation groups found in the vicinity of this location, however the vegetation at the site can be generally classified as Mixed Woody Vegetation dominated by Palm trees (*Cocos nucifera*). The understorey mainly includes Dhiggaa (*Hibiscus tiliaceus*), Boa-kashikeyo (*Pandanus tectorius*) and Aamanak (*Ricinus communis*). Additional species found in the site include Banana trees (*Musa sp.*) and Kudhi-lun'boa (*Triphasia trifolia*). This part of the island has some of the largest Maa-kashikeyo (*Pandanus odoratissimus*) stands found in the Maldives, however they remain largely outside the proposed site.

Of the vegetation species recorded on site, the most abundant species were the Palm trees (*Cocos nucifera*) of which 20 large trees will need to be cut down or relocated under this project.

The site is easily accessible and no unique trees or groups of vegetation were observed during the field visit. The removal of the palm trees will be the most significant terrestrial impact from this project. Any palm trees that fall within the direct footprint of this project will need to be removed, and the proponent will coordinate with the local council to carry out this activity (if relocation is required).

6.2.2 Fauna

The field team did not observe much fauna on the site or its vicinity. The only species recorded at the WMC site during the field visit was the fruit bats (*Pteropus giganteus ariel*), the common crow (*Corvus linnaeus),* and the common garden lizard (*Calotes versicolor).*

However, based on local accounts and experiences from similar conditions found in the Maldives, it can be said that some other common species such as the Rat (*Rattus sp.),* Asian Koel (*Eudynamys scolopaceus*) and other small fauna will be found in this area.

No bird species or other faunal species of significant importance was identified at the proposed WMC site. According to locals, the mangrove area on the south side attracts more birds, while the mangrove area on the west (closest to the proposed WMC site) does not attract much birds. Locals also highlighted that the bird numbers have decreased over the years.

The construction of the WMC is likely to have moderate impact on the flora and fauna of Hoadehdhoo.

The operation of the WMC is likely to have a significant impact on the flora and fauna of Hoadehdhoo.

Figure 6-7 Engaging with locals to gather more information regarding the site

Figure 6-8 Maa-kashikeyo (Pandanus odoratissimus) is found abundantly in the periphery of the proposed site

Figure 6-9 Ruh (Cocos nucifera) dominate the upper canopy of the proposed site

Figure 6-10 Dhiggaa (Hibiscus tiliaceus) dominate the understorey of the site

6.3 TOPOGRAPHY

The WMC is located in flat land.

6.4 VISUAL AMENITY

The area of the WMC has high aesthetic value from a local island level comparison. It is located close to wetlands and is surrounded by mature screw pine trees, coconut palms and green vegetation

6.5 NATURAL HAZARDS AND RISKS

According to the UNDP Disaster Risk Assessment Report of Maldives in 2006, proposed site is located in an area exposed to tsunami, wind storms, storm surges and flooding. The following parameters can be deduced for the island based on Disaster Assessment Report and the Detailed Island Risk Assessment Reports (UNDP, 2009).

Tsunami: Maximum probable wave height less than 4.2m

Cyclone or storm (wind): Probable maximum wind speed 55.9 knots

Storm surge: predicted storm surge height – 0.45 m; predicted storm tide height 1.38 m

Rainfall: probable maximum daily rainfall for Hulhule' for a 500 year return period 284.4 mm

According to council the island gets flooded from rainfall. However, it was informed that the site of the WMC does not get flooded.

6.6 CULTURAL AND HERITAGE VALUES

There are no areas of cultural and historic significance in the vicinity of the WMC site.

7 SOCIO-ECONOMIC ENVIRONMENT

7.1 POPULATION

According to Census 2014, Hoadedhdhoo had a total population of 861. The population in 2014 comprised of 61 foreigners.

7.2 LAND RESOURCE

The total land area of the island is 92.7 hectares. The wetlands in the island cover about 5.3 hectares of land area.

7.3 POPULATION DENSITY

The population density was 9.3 people per hectare in 2014.

7.4 HOUSEHOLDS

There are a total of 178 households in Hoadhedhdhoo according to census data. Average household size is 5.0.

7.5 WATER RESOURCES AND SEWERAGE

The island does not have a desalinated water supply system. At present, the main sources of water are ground water and rainwater collected and stored during rainy season.

The island does not have a sewerage system. Most of the households are using septic tanks.

7.6 ECONOMIC ACTIVITIES

The main economic activity in Hoadedhdhoo is agriculture. There were 73 people engaged in agriculture while 24 people were engaged in fisheries. About 88 people reported they were engaged in manufacturing activities while 59 were engaged in education.

7.7 TRANSPORT

Hoadedhdhoo is accessible via Kaadedhdhoo airport. The Atoll Ferry also links Hoadedhdhoo to other islands of South Huvadhoo Atoll.

7.8 ELECTRICTY

Electricity in Hoadehdhoo is provided by FENAKA. Hoadedhdhoo has an installed capacity of 579 KW and consumes 333,259 liters of diesel. Daily peak load is 235kW and the peak load time is 12:00pm. The island contributes 887.27 tCO2 of Carbon Dioxide from electricity production annually (Island electricity data book 2017).

8 IMPACT PREDICTION AND MITIGATION MEASURES

8.1 INTRODUCTION

Potential adverse and beneficial impacts of construction and operation stage of the proposed construction of the WMC are identified and evaluated in this section. Significant impacts are identified and evaluated in two stages. The first stage identifies the environmental and socio-economic components that may be impacted from key project activities. The second stage determines the significance of impacts of each component. The following sections provide details of the evaluation of impacts.

Nature of potential impacts is defined here as No Impact, Adverse Impact or Beneficial Impact. Where impacts are not applicable to different components, this is indicated as 'X'. Some aspects may be affected both adversely (indicated as [-]) and beneficially (indicated as [+]) from the project.

8.2 IMPACT IDENTIFICATION AND EVALUATION

Environmental and socio-economic aspects that may be impacted by the project as identified in Table 8.1 are further evaluated to identify significant impacts. Assessments of the impacts are conducted using the four criteria of Magnitude, Reversibility, Duration and Distribution as described below. Evaluation of key impacts is provided in Table 16.

1. **Magnitude**: Refers to the quantum of change that will be experienced as a consequence of the impact.

2. **Reversibility:** Refers to the degree of reversibility of an impact (i.e. ease of reversing the conditions).

3. **Duration:** Refers to the temporal scale (i.e. duration, frequency) of the impact. It does not take into account the duration of the impact's effects.

4. **Distribution:** Refers to the spatial scale of the area impacted (e.g. a small portion of a reef or an entire lagoon)

Estimates for negative impacts represent a 'worst case scenario' based on the assumption that the project will undergo full-scale development with no consideration for its environmental and social consequences, i.e. significance is assessed prior to implementation of mitigation measures. Values are attributed by the EIA team on the basis of direct observation of surveyed sites, professional judgment and pre-existing experience in development projects of similar nature.

8.3 EVALUATION OF CUMULATIVE IMPACTS

While direct primary impacts are relatively easy to identify and evaluate, special consideration needs to be afforded to evaluating cumulative impacts. While it is relatively simple to identify and evaluate direct primary impacts, the complex nature of natural systems makes it difficult to accurately predict synergistic and interactive impacts of a particular development project. On the other hand, it is relatively simple to identify potential additive impacts. The following sources of cumulative impacts were considered in evaluating the potential impacts of the proposed project.

- Time crowding: overall impacts of many similar concurrent developments. E.g. While many marine species and birds are relatively versatile and can relocate to other similar habitats following disturbances, concurrent developments in nearby habitats will reduce their chances of relocation and survival.

- Space crowding: high density of impacts on a single environmental medium. E.g. release of effluent from different sources into the same area.

- Indirect impacts: secondary and tertiary impacts resulting from an activity. E.g. groundwater contamination can affect the growth of terrestrial plants, which result in loss of habitat for terrestrial fauna.

- Triggers and thresholds: ecological systems can undergo fundamental changes beyond certain thresholds. Standards and guidelines have been developed based on anticipated threshold levels, for instance, in determining water quality. Such standards have been considered, where available.

Table 8-1: Impact Identification Matrix

Project Activity	Ambient noise level	Ambient air quality	GHG emissions	Groundwater	Terrestrial Flora and	Soil Condition	Landscape Integrity/	Natural Hazard Risk	Health and Safety	Demand for	Local Economy	Social Cohesion
Construction Phase												
Mobilization and site setup	-	-	-	X	-	X	-	X	-	X	+	+/ -
Worker accommodation and activities	X	X	X	-	X	X	X	X	+	+	+	+/ -
Equipment and material storage	X	X	X	-	X	X	-	X	X	+/ -	X	+/ -
Site clearance	-	-	-	-	-	-	-	-	-	+	+	+/ -
Excavation and foundation laying	-	-	-	-	-	-	-	X	X	+/ -	+/ -	X
Dewatering	-	X	X	-	X	-	X	X	X	+	X	X
Concrete works	-	-	-	-	X	-	-	X	-	+	+	X
Construction of compost bed	-	-	-	-	X	-	-	X	-	X	X	X
Demobilization	-	-	-	X	X	X	X	X	X	X	X	X
Operation Phase												
Collection and transportation of waste	X	X	-	X	X	-	-	X	- /+	+/ -	+	+
Burning waste	-	-	-	X	-	-	-	X	-	X	X	X
Composting	X	-	-	-	X	+	-	X	X	X	+	
Maintenance works	X	X	X	-	X	X	X	X	X	+/ -	+	X

- X (no impact), - (negative impact), + (positive impact)

Table 8-2: Evaluation of key impacts on the natural and socio-economic environment

Impact area	**Direct Impacts**	Indirect/ Cumulative Impacts and Impact Interactions	Magnitude	Reversibility	Duration	Distribution	Significance
Ambient noise level	***Noise Pollution:*** Operation of vehicles, machineries during mobilization, site clearance, construction activities (e.g. building construction, excavation), and demobilization is expected to generate noise. However these will not be operated continuously for a long period of time.	The proposed project site is away from the residential zone. Hence, impact of noise generated during construction works will not be significant to the residents.	Minor negative	Easily reversible	Short term	Vicinity of project sites	Insignificant (*Limited hours of operation*)

Impact area	**Direct Impacts**	Indirect/ Cumulative Impacts and Impact Interactions	Magnitude	Reversibility	Duration	Distribution	Significance
	Noise Pollution: Operation of WMC and burning waste is not expected to generate high noise levels.	The proposed project site is away from the residential zone. Hence, impact of noise generated during operational stage will not be significant to the residents.	Minor negative	Reversible (with costly implications)	Long term	Vicinity of WMC.	Insignificant (*located further away from the residential zone).*
Ambient air quality	**Air quality degradation**: Negligible level of dust and air emissions during transport of equipment's to the project site. In addition small amounts of emission are anticipated during operation of machineries and	Cumulative from different project activities	Minor negative	Easily Reversible	Short term	Island level	Insignificant (*Negligible levels of dust and air emission*)

Impact area	**Direct Impacts**	Indirect/ Cumulative Impacts and Impact Interactions	Magnitude	Reversibility	Duration	Distribution	Significance
	vehicles and during construction stage. However this will be negligible given the site is a natural environment with immense vegetation cover to purify the air.						
GHG emissions	**Increase in GHG in atmosphere** due to construction equipment, power generation for equipment	Cumulative from different project activities and over time	Minor negative	Reversible in the long term	Short term	Regional level	Insignificant (*Negligible amount of GHG emissions over short period*)
	Increase in GHG in atmosphere due to waste dumping, composting and burning.	Cumulative from different project activities and over time	Minor negative	Reversible in the long term	Long term	Regional level	Insignificant (

Impact area	**Direct Impacts**	Indirect/ Cumulative Impacts and Impact Interactions	Magnitude	Reversibility	Duration	Distribution	Significance
Groundwater	Accidental spillage of fuel or other hazardous substances could pollute the groundwater.	Cumulative from different project activities Indirect impact on terrestrial flora, fauna, and soil condition Excavation can expose deeper soil layer and groundwater to increased risk of contamination by accidental spillages	Moderate negative	Irreversible	Long term	Island level	Major
Terrestrial Flora and Fauna	Loss of terrestrial flora and fauna due to vegetation clearance	Cumulative from different project activities and over time	Moderate negative	Reversible in the long run	Short term	Island level	Significant
Soil Condition	Accidental spillage/ leakage of fuel, lubricants, etc. during construction	Cumulative from different project activities and over time	Moderate negative	Reversible in the long term	Long term	Site level	Moderate negative

Impact area	**Direct Impacts**	Indirect/ Cumulative Impacts and Impact Interactions	Magnitude	Reversibility	Duration	Distribution	Significance
Landscape Integrity/ Scenery	Loss of visual amenity due to built structures and operation of WMC	Cumulative from other building and development works in the area	Minor	Reversible with costly implications	Short term	Site level	Minor negative
Health and Safety	Accidents related to equipment handling and pollution	Indirect impacts from contamination of water, air and soil	Moderate	Possibly irreversible	Long term	Island level	Moderate negative
Demand for Resources and Services	Demand for freshwater and energy during construction and operation	Cumulative impact on Stelco	Negligible	Reversible	Short term	Island level	Insignificant
Local Economy	Increase in employment opportunities: workers will be employed for operation of WMC	-	Minor positive	Reversible	Long term	Island level	Minor positive
Social Cohesion	Choice of work methodology, construction workers or	-	Minor negative	NA	Short term	Island level	Minor negative

Impact area	**Direct Impacts**	Indirect/ Cumulative Impacts and Impact Interactions	Magnitude	Reversibility	Duration	Distribution	Significance
	contractors for the project, may lead to dissatisfaction amongst island population.						

9 WMC OPERATION

The WMC shall be operated in accordance with the 'Decision Note' given by EPA, other relevant regulatory requirements, and this EMP. The responsibility for the operation of the WMC lies with the Island Council.

The primary activities carried out in the WMC shall include:

Receive household waste

Receive commercial waste

Receive hazardous waste that originate from household activities

Monitoring of incoming waste and outgoing waste

Maintenance of records

Separation of received waste

Segregation of recyclable resources

Storage of waste

Transfer of waste to Regional Waste Management Facility

Control and manage all the aspects of WMC and its operations that may affect the environment

Management of the WMC to ensure the safety of the public, the operators and the environment

9.1 OPENING HOURS

The WMC shall be open to the public during opening hours as determined and advertised by the Island Council. It will be closed on public holidays and as advertised by Council. It is absolutely essential that the public is well informed about the opening hours so that trust of the WMC is not compromised.

The site will remain in operation until no later than 1700 hours. This is to enable staff to undertake required waste management activities such as compaction of waste, separation of waste materials and application of cover material where needed. These activities are necessary to avoid, reduce or correct impacts such as odour, pests, noise, and dust.

9.2 SUPERVISION AND MANAGEMENT

The Island Council will recruit a manager for the WMC and adequately train the manager. The manager will be responsible for all the waste management activities at the WMC at all times. Council will also ensure there is at least one staff member at the WMC during opening hours to ensure:

Public access and safety;

Visitors are directed to correct waste disposal areas within WMC;

Incoming waste is segregated properly;

Screening of waste;

Recording the volume of waste;

Waste is compacted as required;

Covering of waste;

Undertaking steps to address litter, pests, weed and fire incidents;

Maintenance of access roads as required;

Security of the site;

Prevent unauthorized entry; and

Prevent unauthorized disposal.

9.3 WMC SECURITY

A low wall and high fence will be erected along the boundaries of the WMC. The WMC will have a lockable gate. The gate of the WMC will be closed outside opening hours. The Council will maintain adequate security for the WMC and ensure the maintenance of boundary fences and the lockable gates. The WMC staff and any subcontractors will be provided with keys to the WMC gate and waste management facilities for after hour access.

9.4 SIGNAGE

The WMC will put up signage to direct the movement of waste loads within WMC and to ensure the safety of visitors. There will be signage on the gate displaying conditions of entry. The WMC will seek the approval of the Council and the EPA for the signage. The signage will include as a minimum:

Hours of operation

Conditions of entry

Acceptable wastes

Unacceptable wastes

Direction for different types of waste

Drop off points for different materials

Safety measures

9.5 WASTE ACCEPTANCE

All wastes entering the WMC will be inspected before disposal to ensure they are not hazardous, and their entry is to be recorded. If the load is suitable for the disposal, the drivers will be subsequently advised as to which section of the WMC each component of their load should be taken.

The total quantity of waste disposed of at the premises in accordance with EPA's Decision Note must not exceed 300 tonnes per year. The WMC will accept the following wastes as shown below.

The Council will not permit or allow any waste to be received at the premises except for those expressly referred to in the EPA "Decision Note". The materials listed below will not be accepted at WMC. Council staff will be responsible for preventing their acceptance.

1. Liquid wastes
2. Medical wastes
3. Explosive and flammable materials
4. Any toxic organic material, including any pesticide or weedicide, in particular containing:
    a. Chlorinated hydrocarbons
    b. Fluorinated hydrocarbons
    c. Organophosphates
    d. Carbamates or thiocarbamates
    e. Phenols
5. Any material containing:
    a. Arsenic
    b. Cadmium
    c. Cyanide
    d. Lead
    e. Mercury
    f. Selenium
    g. Sulphide

6. Any toxic inorganic material including any soluble salt or the following:
    a. Barium
    b. Boron
    c. Chromium
    d. Copper
    e. Manganese
    f. Silver
    g. Zinc

7. Any soluble acid or alkali or acidic or basic compound, unless it can be shown that it may be beneficial to the operation of the WMC.

9.6 WASTE SEGREGATION

The success of WMC operations depends on segregation at source. Hence, all households will be requested to segregate waste at their home. The island waste collection service operators will be educated by WMC to place segregated waste into designated areas or designated bins. The WMC will put up appropriate signage to direct waste collection service operators and visitors to the correct designated areas.

The materials that can be reused and are suitable for sale will be identified and placed in a re-use shed or placed in designated areas for processing.

All WMC staff will be trained on waste classification. Waste loads that contain unacceptable categories of waste will be refused entry.

WMC staff will carry out the following waste screening activities:

- Put up signage that show the types of waste accepted by WMC.
- Put up signage that shows the types of waste that will not be accepted at the WMC.
- Visually inspect at WMC entrance waste loads to identify materials not accepted.
- Inquire from customers whether hazardous materials, such as lead acid batteries, gas bottles, solvents, and paints are contained within the waste load.
- Check empty chemical containers such as pesticides, cleaning agents and fertilizers for proper rinsing before accepting.
- If there is doubt on whether to accept the waste, the WMC will require EPA or Council approval before accepting the material to WMC.
- Maintain records of all waste screening and inspections for at least 5 years.
- Notify EPA if any unauthorized hazardous wastes are discovered at WMC.

9.7 UNACCEPTABLE WASTE PROCEDURE

The WMC staff who are on duty will refuse entry of loads of waste that are identified to be unacceptable waste. The WMC staff will inform where the waste shall be re-directed to and record the details of the incident. WMC staff shall maintain the following records for any waste that is refused entry:

Date:

Time:

Type of waste:

Origin of waste:

Information given to the customer/person who brought waste:

Staff of EPA to whom information was reported:

Time and date of reporting to EPA:

9.8 RECORDING OF WASTES RECIEVED

Staff at the gate will inspect all waste loads that come into the WMC. A volumetric survey will be used for the recording of quantities of wastes received. This will involve the Council surveyors surveying green waste and scrap metal stockpiles at the end of each reporting period.

9.9 EQUIPMENT

The Council will maintain, hire or purchase required machinery and equipment sufficient to undertake the following:

Separation of waste at household level;

Waste collection and transfer service;

Separating and maintaining stockpiles of metals, tyres, timber, concrete and demolition wastes;

Compaction of metal cans and plastic bottles; and

Composting.

All equipment will be maintained in a proper and efficient manner and in accordance with relevant manufacturer standards. Maintenance and monitoring of equipment will be undertaken by WMC staff daily. Servicing of equipment and machinery will be undertaken regularly by a suitably qualified third party mechanic as required.

9.10 WASTE COMPACTION

WMC will use waste compaction equipment as required to ensure that waste is adequately compacted. WMC will use equipment that are suitable for the small size of the site and low tonnages. Currently it is proposed to use compaction for metal cans and plastic bottles. It is not anticipated that new large machinery will be brought in for the foreseeable future.

9.11 COMPOSTING PLAN

Experts will develop a composting plan and guidelines. The plan will include the necessary technical drawings and calculations.

The Council will assess the quality of the compost through liaison with experts in the field. Data will be gathered during the annual volumetric survey on the quantity of compost produced.

9.12 WET WEATHER OPERATIONS

The storm water management and collection systems at WMC will be constructed and maintained in such a way that minimizes the risk of flood events and spills. Access into the WMC will be maintained during all weather conditions without compromising the environmental management of the site. The access roads will be leveled and graded to ensure waste is transported in a safe manner and damage to the environment and property are minimized.

10 RESOURCE RECOVERY AND RECYCLING

The Council will continue to assess methods to maximize materials recovery and minimize the amount of waste going to RWMC. Council will continue its involvement in community campaigns to educate the public about separation of waste at the household and on site.

10.1 MIXED RECYCLABLES

WMC staff will direct customers to deposit any mixed recyclables into a skip bin near the entrance of the WMC. The skip bin will be serviced by WMC staff.

10.2 GREEN WASTE

The WMC will accept source separated compostable material. The source separated organics are made up of the following materials:

Vegetables and fruits

Bread, rice, pasta, and cereals

Dairy products

Fish, bones, shell fish

Eggs

Meat and poultry

Coffee grounds, filters and tea bags

Non recyclable paper including:

Food soiled paper

Paper napkins, plates, cups

Paper towels

Certified compostable products

WMC staff will direct customers to deposit any green waste adjacent to the green waste stockpile. The staff will be responsible for visual inspecting of the deposited green waste before it is pushed up into the stockpile.

The green waste stockpile shall not exceed the limits set in the composting plan. All works required to keep the stockpile within the size constraints will be conducted by WMC staff. Once the stockpiles have reached adequate size, the composting staff will shred the material and transfer it to the composting pit.

10.3 SCRAP METAL

The staff at WMC will separate the scrap metal into ferrous metal and non-ferrous metal. Ferrous metals will be stockpiled in a separate area. The non-ferrous metals comprising mainly aluminium and copper will be stockpiled separately. Scrap metal stockpiles will be kept tidy and located in an accessible location for recyclers. All works required to keep the stockpile within size constraints will be conducted by WMC staff. WMC staff will also be responsible for preventing the public from scavenging directly from the scrap metal stockpile. Council will make arrangements for the removal of scrap metal and receive any income from scrap metals.

10.4 BATTERIES

The batteries will be separated and stockpiled separately. The Council will seek the guidance of EPA on stored batteries. All arrangements for the removal of batteries shall be informed to the EPA and permission obtained.

10.5 WASTE OIL

Waste oil will be placed in waste oil containers in a waste oil shed. WMC staff will be responsible for transferring oil from small containers into the waste oil collection tank. Customers will not be permitted to have access to the oil collection tank for any reason.

WMC shall consult EPA on waste oil management and seek advice. When the RWMF is established, EPA may ask waste oil to be transferred to RWMF in Addu City.

10.6 CONCRETE, BRICKS, AND TILES

Concrete, bricks and tiles will not be specifically separated for recovery due to low volumes anticipated and high crushing costs. They will be provided to customers for use in construction site filling or other construction needs.

10.7 REUSE CENTER

The Council will build a reuse shed to display items of value that may be sold back to the public and avoid being disposed. Items that will be put in the re-use shed will include:

Kitchen crockery

Household appliances

Books

Bulky items such as sofa and furniture of a reasonable condition

Childrens toys

Bicycles and bicycle parts

Motorcycle parts

Reusable construction materials

The WMC will encourage households to bring clean reusable items. When items require significant cleaning or treatment, the person who brings the items will be requested to take it back and bring it adequately cleaned. Since cleaning and treatment may require substantial time of WMC staff, it is not considered feasible to undertake such an operation within WMC.

11 LABOUR AND WORK CONDITIONS

For sustainability and social performance of the project, employees of the project and trust in the management of the system are important. This section outlines the recruitment and treatment of local and foreign migrant workers for WMC operation and maintenance. Although at present local contractors manage the MWC, foreign migrant worker recruitment is discussed considering the fact operations or employment of foreign migrant workers might be used.

11.1 STAFF POLICY

The Island Council shall expressly forbid any forced, bonded, indentured, involuntary prison labor, slavery or trafficking of persons.

11.2 PRINCIPLES

In recruitment of workers, the following principles should be considered.

1. Comply with all national laws and regulations of the Maldives.
2. Follow international best practices where the national laws or regulations are silent.
3. Ensure all work is voluntary and workers are free to terminate their employment upon reasonable notice without penalty.
4. Establish systems to ensure equal pay for work of equal value and ensure employment of foreign migrant workers on equal terms with local workers, consistent with national law.
5. In case of foreign migrant worker recruitment, maintain adequate controls to ensure that workers have not been charged recruitment fees during their recruitment process.

6. Guarantee there is no fraud, deception, or coercion in the recruitment, placement, transportation or management of foreign migrant workers.
7. Be honest and transparent at all times with workers about all aspects of employment terms and conditions.
8. Provide the terms and conditions of employment to all workers. In the case of foreign migrant worker recruitment, provide the terms and conditions prior to departure from the sending country.
9. Establish appropriate due diligence, audit and monitoring programs to screen and manage any recruitment agencies or agents used to select, recruit and/or transport foreign migrant workers.

11.3 CONTRACTS

The Island Council shall ensure that employment contracts are signed by all categories of local and migrant workers employed.

The Island Council shall ensure that only workers who are legally permitted to work in the Maldives work at WMC and employment contracts shall be legally valid and enforceable in the Maldives.

In case of migrant worker recruitment directly by the Island Council, employment contracts shall be signed directly with the Island Council, and not with a third party or a recruitment agent.

Employment contracts with all foreign migrant workers shall be in English language and shall be provided to foreign migrant workers with adequate time for review and the opportunity to ask clarifying questions.

For illiterate foreign migrant workers the contract terms and conditions shall be verbally explained in their native language prior to signing the contract.

11.4 RECRUITMENT AGENCIES, FEES & COSTS

Where recruitment agencies are used for recruitment of foreign migrant worker, the contracts with recruitment agencies/agents shall explicitly prohibit the charging of fees to foreign migrant workers by either the recruitment agents or any sub-agents.

Foreign migrant workers shall not be required to pay for their recruitment and employment at WMC.

In case of foreign migrant worker recruitment the operator of WMC or Island Council shall pay to recruitment agencies an agreed service fee for any recruitment and employment services offered by agencies/agents. These include the agency service fee; international airfare; travel taxes; visa work and/or residence permits (including renewals); security deposits or bonds; medical examinations or other requirements for employment by Maldivian Government or island council; transportation in the Maldives; or location of accommodation; insurance; and any other fees required by government.

The costs of recruitment shall be paid directly to the extent possible. When not possible, or where the foreign migrant worker is legally required to pay a fee or cost directly, the foreign

migrant worker shall be reimbursed by the Island Council as soon as practicable upon arrival, but no later than one month after the worker's arrival in the Maldives.

11.5 DEPOSITS AND SAVINGS PROGRAMS

Foreign migrant workers shall not be required to lodge deposits or post bonds at the time of their recruitment or at any point during their employment.

11.6 WORKING CONDITIONS

The treatment of foreign migrant workers shall be equal with that of local workers. This includes the same wage rate for the same job, equal opportunity for bonuses, regular and overtime hours, shift arrangements, holidays, insurance and any other benefits, except where different benefits are specified under Maldivian law.

The Island Council shall ensure that workers are treated ethically and humanely, and provided with a safe working environment, and not subjected to any forms of discrimination, threats, harassment or abuse.

11.7 ACCOMODATION

The Island Council shall ensure that accommodation is provided for foreign migrant workers that are safe, hygienic, and well maintained. Accommodation facilities shall have access to potable water, clean toilets, clean showers, adequate ventilation, and adequate cooling. The accommodation provided shall have appropriate personal space, secure storage for personal items and valuables, and secure doors.

Foreign migrant workers shall be free to move during working hours to access drinking water and toilets. All workers shall be provided meal breaks as required by Maldivian law.

11.8 COMMUNICATIONS

All WMC policies and procedures shall be provided in Dhivehi and English for workers.

All workers shall be adequately trained on policies and procedures of WMC. Workers shall also be provided training on health and safety requirements, fire safety, emergency preparedness and job related requirements prior to commencing their employment.

When foreign migrants who do not speak Dhivehi fall ill or become injured they must be provided access to proper medical care with assistance from translators.

11.9 WAGES AND HOURS

All workers shall be compensated at the same rates for the same work. There shall be no discrimination in compensation for same work.

All workers shall be paid directly for their employment.

All workers shall be provided a pay slip with appropriate details to understand the basis on which they are compensated. This shall include separate itemization for overtime, bonuses, deductions and other components of wages.

Pay slips shall be provided in English language for foreign migrant workers, and each foreign migrant worker shall be provided a key to enable them to translate the itemization in their native language.

11.10 STAFF TRAINING

All the staff employed at WMC will be trained adequately to execute activities assigned by the Council. Safety will be given paramount importance in the training programme.

The staff training will include but not be limited to:

1. Skills necessary for the safe use of compaction equipment
2. Skills necessary for the safe use of crushing equipment
3. Skills necessary for safe composting
4. Skills necessary for the safe use of wood shredding and chipping equipment
5. Skills and knowledge necessary to inspect incoming wastes and where the waste needs to be deposited
6. Skills and knowledge necessary to identify the wastes that are unacceptable at WMC
7. Skills and knowledge necessary to complete accurate data recording
8. Skills and knowledge required to use communication and alarm systems
9. Skills required to respond to incidents of fire
10. Skills and knowledge necessary to respond to water pollution
11. Knowledge on procedures for managing incoming waste that is unacceptable to WMC
12. Knowledge and skills on how to reject unacceptable waste
13. Skills for recording incidents of unacceptable waste
14. Skills and knowledge on detailed composting procedures and quality control
15. Knowledge required for keeping record of compost

The WMC supervisors will be trained through training programmes such as those offered by Ministry of Environment and Energy. The training materials made available by MEE and other government agencies will be recorded in Council's files. Where necessary, new supervisors will be given training before commencement of work. Council will also give emphasis to retraining of staff.

11.11 SAFETY AND HEALTH

Council will ensure that all staff and contractors are provided with training in workplace, health and safety issues as it relates to the duties performed at the WMC. All staff will be made aware of the potential hazards and risks present at the WMC.

Council will also ensure that staff are provided with personal protective equipment as required to perform their duties in a safe and responsible manner, in particular when handling hazardous waste materials or operating machinery.

Signage relating to safety on site will be clearly displayed for the public, staff and contractors visiting the site to ensure that safety precautions are adhered to. The types of signage include but not are limited to:

- The types of wastes not accepted on site, e.g combustible materials, unauthorised chemical drums;
- Location of first aid and fire extinguishers; and
- Excluded or barricaded areas.
- Equipment will be operated in such a way as to minimise risk to persons delivering waste for disposal or transfer.

11.12 PERSONAL PROTECTIVE EQUIPMENT

WMC must at all times have a fully stocked first aid kit. Regularly scheduled safety meetings must be held for staff. Staff must be provided with gloves, hard-soled shoes, hard hats, dust masks, hearing protection and other safety clothing and equipment as may be necessary.

11.13 GRIEVANCE MECHANISM

The Island Council shall have effective, confidential grievance mechanisms, and shall ensure that workers can raise grievances without intimidation or fear of retaliation. Such mechanisms should also include the ability to report grievances anonymously if desired, unless restricted by Maldivian law.

The Island Council shall have procedures in place to respond to and address grievances in a prompt manner. The resolution of grievances shall be reported back to workers. Workers who disagree with how a grievance is resolved shall be given the opportunity to appeal the decision. No retaliation shall be taken against foreign migrant workers who report grievances in good faith.

12 ENVIRONMENTAL IMPACT MITIGATION

12.1 FLY PREVENTION AND CONTROL

Flies have the potential to cause regular and significant problems on and around the WMC. Common houseflies have always been associated with putrescible waste (includes both food and green waste). Infestation typically starts at the point of waste generation, when eggs are laid on waste in domestic or commercial waste bins. The longer the period of time before the waste reaches the WMC, the greater the opportunity for fly problems to develop.

It is critical that proper fly control is used at the WMC with the flexibility to carry out additional treatments at peak times. WMC staff will:

Monitor adult fly numbers twice a week using an appropriate technique, such as resting counts in squares marked on internal walls and floors

Carrying out waste acceptance checks, monitoring fly numbers in each load, recording heavily infested loads in a fly contaminated load log sheet, treating loads and priority covering of loads.

Where it is not possible to monitor loads at entry, operators would monitor upon discharge

Rejecting infested/problematic waste if from a known repeat problematic source,

Proper waste handling and rotation

Ensuring that waste does not accumulate in inaccessible areas such as behind walls or in corners

When fly numbers are high, investigate potential fly breeding areas

Applying a daily cover thick enough to prevent fly infestation at the tipping area

Immediately covering waste streams that ate highly attractive to flies or which commonly experience infestation such as food waste

Training staff in the use of fly spray, identifying flies, and understanding the importance of monitoring/recording fly infested loads.

Houseflies may not breed within good quality green waste. However, green waste may attract flies to it. Hence, regular turning of waste windrows, especially the fresher waste, will limit any fly breeding that may occur.

12.2 PESTS AND VERMIN CONTROL

Incidence of cats and rats is a problem for WMC. Rats and cats have the potential to cause regular and significant problems on and around the WMC. Since the area around the WMC is a vegetated area, it is absolutely essential that attention be given to control pests.

Council will manage pest and vermin numbers through the use of baits, traps and bird scares where required. Should the use of chemicals be deemed necessary, care will be exercised to ensure that chemicals are not subject to stormwater or leachate runoff or not susceptible to becoming air borne and posing an environmental pollution hazard. Areas of the WMC that will require particular attention will be:

Green waste stock piles

Scrap metal stockpiles

Tyres and plastic stockpiles

12.3 ODOUR CONTROL

The WMC is not in close proximity to neighbouring residents and odour related issues are not anticipated. However, all complaints will be logged in Council records. Operation of composting will be undertaken in such a manner so as to minimize the generation of odour. Special attention will be given to manage fish viscera which could lead to foul odour, All practicable measures will be implemented to minimize offensive odours escaping the WMC site. These include:

Application of daily cover to putrescible waste

Covering all fish viscera deposited at WMC at a burial pit with daily cover material

Maintenance of water run off prevention to ensure that storm water does not enter the stockpiles and compost pit.

Any odours identified will be covered immediately with cover material.

12.4 LITTER CONTROL

On windy days, blowing of litter could be a potential problem. The wall and fencing is expected to catch any wind blown litter. The staff at WMC will take measures to prevent problems caused by wind blown litter by:

Adequate maintenance of the fence on the boundary of WMC;

Daily supervisory rounds to check for incidence of litter;

Put coverings on waste that is prone to wind blown litter; and

Intermediate covering of waste layers after daily duty.

12.5 LEACHATE MANAGEMENT

The leachate on site will consist of stormwater run-off from stockpile area and green waste stockpiles.

Leachate from the WMC will be generally managed by:

Grading of the site to prevent the ponding of water

Application of cover to waste stockpiles during rainy weather

Diversion of stormwater away from the waste stockpiles

Construction of bunds to divert water away from the waste stockpile areas

Minimizing the amount of water used to clean the WMC and storage areas generally;

Only operating one compost pit

Denying the deposition of prohibited liquid wastes.

Planting of grass in the compound of the WMC

The small size of the WMC, low tonnages, and management system will limit the leachate collection and treatment options. Council will be focused on leachate minimization as the primary method of leachate management. It is expected that any leachate entering the groundwater will have its TSS, metals and nutrients reduced.

12.6 STORMWATER MANAGEMENT

Stormwater gathered at WMC will be managed to ensure it is not contaminated with leachate and is free of sediment. The stormwater on site will consists of:

Clean stormwater from roofs

Clean stormwater from undisturbed areas

Leachate contaminated stormwater run-off from active composting areas and green waste stockpiles

Stormwater runoff from waste stockpile areas.

Council will manage stormwater by:

Constructing and maintaining a series of temporary stormwater drains to prevent stormwater

run-off from active waste disposal area or green waste stockpile area

Constructing and maintaining a series of bunds to prevent stormwater coming into contact with active waste stockpiles and compost pit

Maintaining a grass cover in all non-paved areas of WMC

Ensuring all drains are cleaned, desilted and functional

12.7 NOISE MANAGEMENT

The WMC will implement the following measures to minimize the noise generated from the waste management activities:

- Equipment and machinery will be run as efficiently as possible and run only when the required load is reached.
- Limit the time of use of equipment and machinery to specified working hours between 9.00 am and 6.00 pm.
- Service the equipment regularly to ensure they are in best condition for use.

12.8 DUST CONTROL

Since the nature of composting operations requires that material remain moist, dusting from the compost and mulch piles will be minimal. Dust is likely to be a problem from the access road. Council will maintain the WMC in a condition that minimizes the emission of dust from the premises. Council will ensure dust generation at the site is minimized where practicable by adhering to the following practices:

- Use of water cart if required on access road during dry season and as required;
- Machinery and equipment to be washed frequently;

- To delay or suspend earth moving activities when excessive dust is being generated that may affect residents
- To rehabilitate and re-vegetate areas within WMC as soon as practicable after construction or works have been completed.

12.9 WEED MANAGEMENT

Weed management will be undertaken to control weed growth and ensure there is cleanliness in all areas of WMC. Weed growth could provide habitats for insects and rodents. WMC staff will remove weed manually where necessary. In order to prevent the spread of weed growth, the disturbed areas will be re-vegetated with plants as soon as possible. Special attention will be given in compost procedures to ensure organic matter and seeds are kept at optimum temperatures for organic breakdown.

13 SOCIAL IMPACT MITIGATION

13.1 COMMUNICATION

There is no agreed management model in place yet. It is absolutely critical that the Island Council has communication with EPA and the community on the management model that will be adopted for the WMC.

There is a need to ensure that all aspects of the WMC management are properly communicated on a timely manner to all stakeholders. The Council needs to communicate to all households the procedures for waste segregation, waste collection and waste processing. The timetables of waste collection and user fees will need to be communicated and discussed with households.

13.2 EMPLOYMENT

The WMC will need to employ about three staff. There is a need to develop a human resources management policy for WMC. All staff need to be provided with proper job descriptions. Proper protocols will need to be followed in recruitment of staff for WMC. In a situation where the management functions are outsourced to a third party, it will be responsibility of the Council to ensure that recruitment of staff and paying of wages are according to the Maldives government laws and regulations.

The administrative services and financial management related to the operation of the waste management system will need to be included in the job descriptions of the relevant staff at the Island Council Secretariat. Tasks related to the waste management system will include, but not be limited to, record keeping on the operation of the waste management system, reporting, monitoring and collection of user fees.

For social sustainability it is essential to ensure the work rights of the employees at WMC. Contracts need to be signed with all workers. Procedures must be put in place to ensure protection of worker rights.

13.3 EMERGENCY RESPONSE

The WMC shall develop a procedure manual for emergency and corrective action that may include:

Unauthorised access to the WMC

Fire

Severe storm

Serious injury

Delivery of unacceptable materials

Spills or leak of vehicle fuel

The person responsible for all emergency response is the WMC site manager. Employees must be trained in the proper response to emergencies.

13.4 FIRE PREVENTION AND FIRE SAFETY

As a first step towards prevention of fire incidents, WMC staff will inspect all incoming loads for any materials that carry a fire hazard. Waste loads that carry high fire hazard will be rejected.

In order to reduce the fire risk caused by wood materials, wood will be processed in a timely manner. The size of stockpiles of wood and mulch will be controlled.

At the WMC, fire extinguishers will be placed near the waste management equipment and in close proximity of the gate. WMC staff will be trained on use of fire extinguishers, fire safety practices and will be made aware of the location of fire safety equipment.

If a fire incident occurs at the WMC, the supervisor will decide whether to shut down the WMC or not. MNDF Fire Service are to be contacted immediately in the event of a fire outbreak.

If a small fire is identified, the WMC staff will isolate the fire from the waste materials and attempt to extinguish it by using water hoses and or fire extinguishers. Following a fire, the WMC will be inspected for any sign of damage or hazard prior to reopening.

All fire incidents will be recorded in detail and reported immediately to the EPA.

The following measures will be implemented to minimize incidence of fires at the WMC:

1. Signage to ensure flammable liquids that are not permitted on WMC, do not get accepted and stored at WMC;
2. Combustible materials such as fuels and other flammables are separated and kept in secure storage areas away from main waste disposal areas;
3. Dry green waste materials that may cause a fire hazard are stored separately and in small windrows to minimize combustion;
4. Strict enforcement of “no-smoking” in WMC;

The following protocol and procedures will be followed to ensure preparedness for fire safety:

1. Ensure a minimum of one staff at WMC during during operating hours to preventing deliberate arson;
2. Provide regular scheduled training on fire prevention and management to all staff of WMC;
3. Maintain a log book of any fire incidents;
4. Put up signage showing relevant contact numbers for MNDF, Police and emergency services in a location readily visible for staff;
5. Install appropriate fire extinguishers in WMC;
6. Train staff on appropriate use of fire fighting equipment.

In the event of a fire, the WMC staff will notify the Council immediately. The Council will then notify the EPA as soon as possible and provide written details to the EPA within 7 days of the date of fire incident. Council will record and report the following information to EPA on fire incidents that occur at WMC:

Date of fire incident;

Time when the fire started;

Location of fire;

Circumstances which ignited the fire;

Weather conditions at the time of fire;

Time and date when fire was extinguished or burnt out;

Amount of waste combusted by the fire;

Actions taken to extinguish fire; and

Actions taken to prevent future occurrences.

13.5 FINANCE

Council must ensure that it has the finance to appropriately manage and undertake required developments at WMC. Sustainable financing is necessary to ensure that WMC operations continue smoothly and do not lead to environmental impacts and social conflicts. The Council must communicate with MEE and Ministry of Finance to develop a mechanism for requisite funding for the life of the WMC. The WMC is in operation and the Council will implement the following activities:

Collecting waste disposal fees from residents accessing the WMC

Balancing the cash register after the WMC has closed each day

Depositing collected cash in the bank accounts of the Island Council

Auditing the cash flow on a regular basis

Ensure revenue is collected from waste management fees and waste disposal fees

Ensure funds in the WMC are capable of site remediation and managing contingencies.

Regularly review the user fees and conduct detailed consultations with the households and businesses in the island on the financial sustainability of WMC operations.

13.6 UTILITIES AND FUEL

Utilities necessary for the operation of the WMCs are electricity, potable and non-potable water and sanitation facilities. Electricity to the WMC is provided through the local utility service provider.

Drinking water is provided to the staff working on-site through rainwater harvesting. Water source for non-potable is supplied through a groundwater well.

Operation of the waste collection service requires fuel for the vehicles and operation of machineries. Fuel is sourced from local suppliers.

13.7 SITE COMMUNICATION

The WMC site staff must carry mobile phones at all times during work hours with which to communicate with management and each other when necessary.

14 ENVIRONMENTAL APPROVAL CONDITIONS

The WMC will be operated in accordance with Environmental Approval conditions stipulated in the Decision Note to be provided by EPA.

15 ENVIRONMENTAL MONITORING

15.1 GROUNDWATER QUALITY MONITORING

It is recommended that groundwater quality sampling and testing be required for the WMC. The Island Council shall ensure that environmental monitoring of groundwater is carried out in accordance with EPA guidelines. The methods for sampling and analysis of water must be agreed prior to the operation of WMC.

Monitoring must be undertaken as required under the Decision Note by EPA to ensure legislative and regulatory requirements are met. Suitable qualified technical staff shall undertake the sampling. All samples collected shall be sent to a laboratory for final analysis and reporting.

For each of the required monitoring points records shall be kept of any samples collected for the purpose of this EMP:

1. The date(s) on which the sample was taken;
2. The time(s) at which the sample was collected;
3. The point at which the sample was taken; and
4. The name of the person who collected the sample.

All records required to be kept by the Council shall be:

1. In a legible form, or in a form that can be readily be reduced to a legible form;
2. Kept for at least 5 years after the monitoring or event to which they relate took place;
3. Produced in a legible form to any authorized officer of EPA who asks to see them.

In the event that the Council is required to undertake groundwater sampling the results of analyses will have to be compared to EPA guidelines and checked for relevant trigger levels. If the parameters measured during testing exceed the established limits then the affected locations will have to be re-sampled as soon as possible. If any contamination is confirmed by the re-sampling, the EPA will have to be notified by the Council, in writing, within 14 days.

Within 28 days of notifying the EPA, the Council will have to prepare a detailed groundwater assessment plan which will determine the extent of remediation required. Upon completion of the groundwater assessment programme, a remediation plan will be prepared, if required by the EPA, detailing the protective actions proposed.

Table 15-1: Monitoring Schedule for Construction Stage

Attribute	Objective	Indicator	Methodology & Applicable Standard	Locations & Sample Frequency	Est. Total Costs RF*	Agency
Ground Water Quality (ground water)	To determine the impact of groundwater water during construction stage	Parameters for ground water quality assessment are pH, Salinity, Turbidity, Temperature, Conductivity ,DO and TDS	Laboratory analysis, Maldivian (EPA) ground water monitoring standards	Two Locations, Once a month during construction	1,935	Proponent
Water Contamination	To determine the impact of oil spillage and leakage on	Oil spills (Surface layer of groundwater)	Visual observation, NA	All area where oil is handled, Daily for the duration of the project	Included in contractor fees	Contractor
		Oil leakage from machinery or vessels	Maintenance and tuning of all machinery & vessels, NA	All area where oil is handled, Weekly during the construction phase	Included in contractor fees	Contractor
Noise	To determine the impact of noise during construction	Noise levels	Noise meter Logs, Ambient noise standard in most OECD countries	Around project site, Once during construction	Included in contractor fees	Contractor

- *Does not include logistic and consultant fees*

Table 15-2: Monitoring Schedule for Operation Stage

Attribute	Objective	Indicator	Methodology, Applicable Standard	Locations & Samples, Frequencey	Est. Total Costs RF*	Agency
Ground Water Quality	To determine the impact on ground water quality through leachate	Parameters tested for ground water quality assessment are pH, Salinity, Turbidity, Temperature, Conductivity, DO and TDS	Laboratory analysis, Maldives EPA ground water monitoring standards	Two Locations, Bi-annually during operation	4,928/ year	Proponent
Noise level	To determine the noise level during operation	Noise levels	Measurement using sound meter, Ambient noise standard in most OECD countries	At the proposed site, 4 readings, Bi-annually during operation for 5 years	3,000	Proponent
Air Quality	To determine the air quality	NO_2, SO_2, PM2.5, PM10	Wolf sensing Toxic Gas Probe Aerocet Mass Monitor, WHO guidelines	At the proposed site for WMC, Bi-annually during operation	3,000	Proponent
Terrestrial Environment	To determine the impact on biodiversity	Flora and fauna count and classification Logs of any pest or foreign species	Observation	At the proposed and the island, Bi-annually during operation	2,000	Contractor
Health and Safety	To assess the impact on the health and safety from the operation of WMC	Health records from heath centre	Logs	The island, Bi-annually during operation	Included in consultant fees	Contractor

15.2 COST OF MONITORING

The cost of environmental and social impact monitoring for the WMC operations is estimated to be about MVR 30,000 annually. The Island Council will hire the services of consultants and technical personnel to undertake the monitoring as necessary.

16 REPORTING

16.1 MONTHLY REPORTING

The staff of WMC must provide to the Council, within 60 days of the end of each month, a monthly report that includes information on:

1. the quantity and type of waste received at the WMC
2. the quantity and type of waste processed at the WMC
3. the quantity and type of waste transported out from the WMC
4. any other information specified by EPA.

The quantity of waste shall be determined according to guidelines provided by EPA.

The Council shall keep records for at least 5 years of:

1. The waste brought into WMC and waste taken out of WMC
2. The transfer of waste to RWMF
3. The quantity of waste material composted, recycled, recovered or processed out of WMC
4. Any unacceptable waste that was received at WMC.

At all times, the Council will have to follow the requirements stipulated in Waste Management Regulation.

16.2 ANNUAL REPORTING

The Council will produce an Annual Report of WMC operation and submit to the EPA. The reporting period will be for twelve months beginning from 01 January and ending 31

December. Council will submit the Annual Report to the EPA no later than sixty days after the expiry of the reporting period. The report will be prepared to an approved format.

The annual report will include information such as:

a summary report on total wastes received;

a summary report on total waste transferred from WMC ;

summary report of fires and any emergencies that occurred at WMC;

a copy of complaints received by the WMC in the last twelve months;

and a summary of any incident reports.

16.3 INCIDENT REPORTING

The Council must report to EPA immediately if any pollution incident occurs at WMC that involves:

Actual or potential harm to the health or safety of any human beings that is not trivial

Actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding MVR 10,000.

Actual or potential loss to ecosystems and species that includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good to the environment.

Should an incident occur, the Council shall notify the EPA by telephoning EPA. A written report must be submitted within seven (7) days of the date on which the incident occurred. The following types of incidents shall be reported to the EPA:

Groundwater contamination

Fires

Chemical spills

Oil/fuel spills

Failure of containment tanks/bund

Wind blown litter

Odour

Explosion (Gas Cylinders).

Occurrence of any incident must be reported in the site's daily logbook as appropriate. The EPA shall be notified of any incident that represents a threat to human health, property or ecosystems.

A written incident report will be provided to the EPA if requested by an authorized officer of EPA. The report will include, but not be limited to, the following details.

The cause, time and duration of the event;

The type, volume and concentration of every pollutant discharged as a result of the event;

The name, address and telephone number of employees of WMC or other witnesses;

Actions taken by the Council in relation to the event;

Details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event;

Any other matters.

17 GRIEVANCE MECHANISM

The residents and community concerns are a top priority. Arrangement will be made to receive complaints through the Council Secretariat or through the WMC after hours as listed in Incident Reporting. Staff will be instructed to respond to community concerns as outlined below:

Staff will maintain a community notification list of those residents who would like advance notice of site operations that may create temporary odours, temporarily increased noise, or increased traffic.

Complaints received from an outside party will be reported, investigated and appropriate action taken/implemented as required. Complaints will be handled as follows: site staff will record the call in detail including time and date, caller's name, address and phone number, and a detailed description of the concern. A complaint log will be maintained at the site.

Site staff will contact Council Secretariat immediately. The Council Secretariat will contact the resident immediately to obtain further information on the concern.

If the concern is about odour, the staff will walk through the WMC to identify the source of odour including the compost pads and bins. Operations will also be investigated. Current weather conditions will be recorded including wind direction, temperature, and rainfall. Once the source of the odour has been identified, procedures to alleviate the problem will be implemented. This may include ceasing to turn piles, adding moisture, mixing in bulking agent and others.

If the concern of the resident is litter, staff will be dispatched immediately to clean up the problem area.

If the resident concern is regarding flies, vectors, dust, noise, or any other problem, staff will be dispatched for immediate response.

Once the problem has been identified and a course of action decided upon, staff will contact the resident to inform them of the measures being taken to address their concern.

Any complaint received will be investigated including:

Date and time of the complaint;

The cause of the complaint;

The climatic conditions at the time of the incident which is the cause of the complaint;

If known, the date and time the incident took place;

The occurrence of similar complaints in the past;

Actions taken in the past to overcome similar complaints.

Details of the complaint received, investigations and actions taken will be recorded on Councils Corporate Records System and kept for at least five years. The records will be available in either electronic or physical form to any authorised officer of the EPA who asks to see them.

Tiers of Grievance Mechanism	Nodal Person for Contact	Contacts, Communication and Other Facilitation by Project	Timeframe to address grievance
First Tier: Council	Council will be the first point of contact. Designated contact persons should be established within the Council. Complaints received by Police will also be shared with the contact person(s) at the Council.	• In the Council Secretariat there will be an Information Board listing the names and contact telephones/emails. • Grievances can be registered informally by contacting the Council (directed to the contact person(s)). • If the grievance cannot be resolved informally, an aggrieved party must submit a complaint on a letter addressed to the President of the ICouncil on the Tier I Complaint Form to take the grievance further. For those who cannot properly write, the Council staff will fill a Complaint Form and get it signed by the aggrieved party. The form must be available online or from the Council Secretariat. A copy of the form must be provided as a receipt to the aggrieved person at the time of submission. The form will be prepared and produced by the Council. • The Council must screen the grievance to determine if the issues and concerns raised in the complaint falls within the mandate of the WMC. • The list of grievances classified as WMC related must be maintained on a register at the Council. Informally communicated grievances must also be listed on the register and must be maintained by the designated contact person(s) at the Council.	7 working days

		• The Council will determine the solutions to the issues either by (i) discussing internally; (ii) joint problem solving with the aggrieved parties or; (iii) a combination of both options. • If the complaint is resolved within 7 working days the Council must communicate the decision to the aggrieved party informally or in writing, depending on how the complaint was lodged. • The aggrieved party must acknowledge the receipt of decision and submit their agreement or disagreement with the decision within 10 days. • If no acknowledgement is submitted from the aggrieved party then the decision will be considered as accepted.	
Second Tier: Environment Protection Agency; Ministry of Environment and Energy	For WMC Projects, MEE will forward the grievance to the EPA.	• If unresolved, the aggrieved party can elevate the grievance to Tier 2 and submit a complaint on a letter or on the Tier II Complaint Form addressed to EPA or MEE. Submission must contain a copy of Tier I submission form or letter and if available, the decision statement from Council from Tier I. • MEE will forward the matter to EPA. • EPA will screen the grievance to determine if it is related to the WMC project. If it is unrelated, the aggrieved party must be notified in writing and the way forwarded must be outlined to them including the necessary government	15 Working Days

		institutions to follow up, like the Police. • A contact person in EPA must be identified for processing a grievance through the Second Tier. • If required, the EPA/MEE must arrange a public meeting to address the tier 2 grievance and notify the nature of the grievance and the meeting venue to the aggrieved party. • EPA may also visit the site and hold onsite discussions and meetings. • The EPA 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 EPA 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 days. • If no acknowledgement is submitted from the aggrieved party then the decision will be considered as accepted. • 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 EPA, in writing, of the intention to move to tier 3.	

Third Tier: Judiciary/ Assistance to Vulnerable Persons beyond the Project's Grievance Redress Mechanism	Court System or Arbitration will remain as an option for an aggrieved person and/or community in case that the others tiers haven not been effective.	• The legal system is accessible to all aggrieved persons. • Assistance may be 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 EPA must assist the vulnerable person(s) in getting this support from Attorney General´s Office. EPA 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 EPA. • The verdict of the Courts will be final.	As per established judicial procedures established in Maldives

18 CONCLUSION

The proposed project involves the construction of the WMC. The WMC will have a compost pit, waste segregation lots, equipment room, toilet, and water tank. This will be implemented as part of this project. The assessment shows that the proposed waste management centre can be developed on the island with some implications on the environment. The assessment shows majority of the impacts during construction stage will due to increased noise levels and soil and groundwater contamination. The assessment also shows that during operation stage, majority of the impacts can be mitigated through the implementation of impact mitigation measures.

The alternative options were evaluated for the no project option and alternative locations for WMC. The "No Project" option is deemed infeasible, given the current condition of waste management and disposal in the island. The proposed location is the site of the existing WMC. Hence, it is considered as a good location for WMC.Stakeholder consultations were held with Island council, public, Ministry of Environment and Energy, and Environmental Protection Authority. Both Island Council and public are in favour of this project.

In conclusion, this project has been designed in conformance to the relevant laws and regulations of Maldives. Operational stage impacts can be mitigated through this EMP. Overall, the project will have positive impacts to the island community under supervised and effective management of the WMC. The EMP recommends to go ahead with the project and to develop the WMC and to follow the mitigation measures to avoid significant impacts.

It is strongly recommended that this environmental management plan be implemented and reviewed and updated periodically to maximize the benefits of WMC and ensure sustainability of operations.

Appendix A: Terms of Reference

بسم الله الرحمن الرحيم

Ministry of Environment and Energy | މިނިސްޓްރީ އޮފް އެންވަޔަރަންމަންޓް އެންޑް އެނަރޖީ

Male', Republic of Maldives | މާލެ، ދިވެހިރާއްޖެ.

Request for Quotations

(Environmental Management Plan (EMP) for GDh. Hoadehdhoo for the Establishment of Island Waste Management Center)

TERMS OF REFERENCE

Consultancy Services for the Development of an Environmental Management Plan (EMP) for GDh. Hoadehdhoo for the Establishment of Island Waste Management Center.

INTRODUCTION

The Ministry of Environment and Energy intends to procure the services of a consultancy firm/individual to develop an Environmental Management Plan (EMP) for GDh. Hoadehdhoo for the establishment of island waste management center.

SCOPE OF WORKS

The assignment include the preparation of the Environmental Management Plan (EMP) work for the island waste management Project in GDh. Hoadehdhoo.

The overall tasks to be undertaken includes but is not necessarily limited to, the following;

- Undertake field data collection survey and develop the EMP report as per the Environment Impact Assessment Regulation 2012.
- Submit the final EMP Report to Environmental Protection Agency (EPA) and get approval/decision statement. (submission fee will be provided by the Ministry of Environment & Energy)
- Undertake submission and provide any clarifications and amendments where necessary to the submitted EMP report
- Accommodate any request by PMU/MEE for any additional information regarding the EMP report.

CONSULTANCY FIRM/INDIVIDUAL

Post	No.s
1. EMP Consultant (As per the criteria given in Environment Impact Assessment Regulation 2012)	01

ELIGIBILITY AND QUALIFICATION

To be eligible for this assignment,

1. The consultancy firm/Individual should submit full CV highlighting the criteria given below:
   a. Bachelor's Degree in Environmental Engineering/Environmental Science/Environmental Management with minimum 05 years' experience in the field of Environment.

   b. Demonstrate past experience in performing the services (description of similar assignments, value of such assignments).
2. The proposed consultancy firm/individual must meet the criteria given in Environment Impact Assessment Regulation 2012
3. The duration proposed by the consultancy firm/individual should not exceed the requirement.

PAYMENT

Upon release of EMP Decision from EPA as per EIA Regulations, 100% payment will be given to the Consultancy Firm/Individual.

STANDARD OF REPORT

All documentation must be developed according to the guidelines provided in the Environment Impact Assessment Regulations, 2012 and amendments and report writing guidelines provided by EPA.

DURATION

a) The duration of the assignment is **35** days including the duration for the EMP approval and release of EMP decision statement.

b) The consultant shall complete the EMP Report and submit to EPA within **14** days. ('Days' shall mean Calendar days).

c) A detailed work schedule should be given which demonstrates the commencement and completion date.

d) Providing additional information to PMU/MEE if required, and follow up with PMU/MEE on EMP approval.

e) The consultants are required to consult with the relevant stakeholders such as but not limited to; the Island Council.

02 January 2018

Appendix B: Letter of Commitment

بسم الله الرحمن الرحيم

Ministry of Environment and Energy
Male', Republic of Maldives.

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ވަޒާރާ، ދިވެހިރާއްޖެ.

ދިވެހިރާއްޖެ ފުވާމުލަކު - ތިނެވަނަ

Ref. No: 438-WMPC/203/2018/46

05 March 2018

Mr. Ibrahim Naeem
Director General
Environmental Protection Agency
Male', Republic of Maldives

Dear Sir

Sub: Environmental Management Plan for the Island Waste Management Center at Hoadehdhoo, Gaafu Dhaalu Atoll

As the proponent of the above project we guarantee that we have read the Environmental Management Plan (EMP) and to the best of our knowledge all non-technical information provided in the EMP are accurate and complete.

We also hereby confirm our commitment to carry out and bear costs of environmental mitigation measures, monitoring and reporting outlined in the EMP report.

Yours sincerely,

Aishath Rashfa
Assistant Director

MINISTRY OF ENVIRONMENT AND ENERGY
REPUBLIC OF MALDIVES

Green Building, Handhuvaree Hingun,
Maafannu, Male', 20392, Republic of Maldives.
+(960) 301 8300
+(960) 301 8301
www.environment.gov.mv

ގްރީން ބިލްޑިންގ، ހަންދުވަރީ ހިންގުން،
ފާހަނަ، ދަ، 20392، ދިވެހިރާއްޖެ.
secretariat@environment.gov.mv
www.twitter.com/ENVgovMV
www.facebook.com/environment.gov.mv

Appendix C: Ministry of Environment and Energy Award Letter

بسم الله الرحمن الرحيم

Ministry of Environment and Energy
Male', Republic of Maldives.

މިނިސްޓްރީ އޮފް އެންވަޔަރަންމަންޓް އެންޑް އެނަރޖީ
މާލެ، ދިވެހިރާއްޖެ.

އިޤްތިޞާދީ ފުދުންތެރިކަން - އިޖްތިމާޢީ ހަމަޖެހުން

މަސައްކަތް ހަވާލުކުރި އެއްބަސްވުން

ތާރީޚު: 11 ޖަނަވަރީ 2018

ނަންބަރު: (AGR)438-PRCU/PRIV/2018/4

1. އެއްބަސްވުމުގެ ތަޢާރުފު:

މި އެއްބަސްވުމަކީ، މިނިސްޓްރީ އޮފް އެންވަޔަރަންމަންޓް އެންޑް އެނަރޖީއިން "ގދ. ހޯޑެއްދޫގައި ޤާއިމުކުރުމަށް ހަމަޖެހިފައިވާ ކުނި މެނޭޖުކުރާ މަރުކަޒުގެ އެންވަޔަރަމަންޓަލް މޮނިޓަރިންގ ޕްލޭން ހެދުމަށް ކޮންސަލްޓެންސީސަރވިސްއެއްގެ ހިދުމަތް ހޯދުމަށް " **ސީ ޑީ އީ** " މީގެ ފަހުން 'މަސައްކަތާއި ހަވާލުވި ފަރާތް' އާއި **"މިނިސްޓްރީ އޮފް އެންވަޔަރަންމަންޓް އެންޑް އެނަރޖީ"**، މީގެ ފަހުން 'މަސައްކަތް ހަވާލުކުރި ފަރާތް' އާއި ދެމެދު ވެވިފައިވާ އެއްބަސްވުމެކެވެ.

2. މަސައްކަތާއި ހަވާލުވި ފަރާތުގެ މަސްއޫލިއްޔަތާއި ޒިންމާ:

މިނިސްޓްރީން ދީފައިވާ މަޢުލޫމާތާއި އެއްގޮތަށް، ކޯޓޭޝަންގައިވާ އަގާއި މުއްދަތުގެ ތެރޭގައި މަސައްކަތް ނިންމައި ދިނުމެވެ. އަދި މަސައްކަތް ނިމިފައި ހުންނައިރު ހުންނަން ޖެހޭނީ މިފަދަ މަސައްކަތް ކުރުމަށް ހަމަޖެހިފައިވާ އާންމު އުސޫލުތަކާއި އެއްގޮތަށެވެ.

3. މިނިސްޓްރީގެ މަސްއޫލިއްޔަތާއި ޒިންމާތައް:

އެއްބަސްވެފައިވާ ގޮތަށް މަސައްކަތް ނިމުނުކަން ޔަގީން ކުރުން

4. މަސައްކަތުގެ އަގު:

މި އެއްބަސްވުމުގެ ދަށުން ކުރާ މަސައްކަތުގެ އަގަކީ ޖީ.އެސް.ޓީ ހިމެނޭގޮތަށް މަސައްކަތާއި ހަވާލުވި ފަރާތުން ހުށަހަޅާފައިވާ އަގު 29998/- **(ނަވާވީސް ހާސް ނުވަސަތޭކަ ނުވަދިހަ އަށް ރުފިޔާ)** އެވެ.

5. މަސައްކަތް ފަސްވުމުން ކަނޑައަޅާ އަގު:

ތިޔަ ފަރާތުން ދެއްވާފައިވާ ކޯޓޭޝަންގައިވާ މުއްދަތުގެ ތެރޭގައި މަސައްކަތް ނުނިމިއްޖެ ނަމަ ފަސްވާ ކޮންމެ ދުވަހަކަށް، ދައުލަތުގެ މާލިއްޔަތު ޤަވާޢިދުގެ 10.71 ވަނަ މާއްދާގައި ބަޔާންކޮށްފައިވާ އުސޫލުން ފަސްވުމުގެ އަގު ދޭންޖެހޭނެއެވެ.

6. އެއްބަސްވުމުގައި އަމަލުކުރާނެ ޤާނޫނާއި ޤަވާޢިދު:

މި އެއްބަސްވުމަށް އަމަލުކުރުމުގައި ތަބާވާނީ ދައުލަތުގެ މާލިއްޔަތު ޤާނޫނާއި އަދި އެހެންވެސް ދިވެހިރާއްޖޭގެ ޤާނޫނުތަކަށެވެ.

7. ސޮއި:

މިނިސްޓްރީއާއި މަސައްކަތް ހަވާލުވި ފަރާތާއި ދެމެދުގައި މި އެއްބަސްވުން ވެވިފައިވަނީ **11 ޖަނަވަރީ 2018** ގައެވެ. އަދި މި އެއްބަސްވުމަށް އަމަލުކުރަން ފެށޭނީ **11 ޖަނަވަރީ 2018** އިން ފެށިގެންނެވެ.

މިނިސްޓްރީގެ ފަރާތުން:	މަސައްކަތާއި ހަވާލުވި ފަރާތުން:
ސޮއި:	ސޮއި:
ނަން:	ނަން: DR AHMED SHAIG
މަޤާމު:	މަޤާމު: CEO
ތައްގަނޑު: މިނިސްޓްރީ އޮފް އެންވަޔަރަންމަންޓް އެންޑް އެނަރޖީ	ތައްގަނޑު: CDE PVT LTD

CDE PRIVATE LIMITED
cde
REG. NO. C-262/2001

Appendix D: Ministry of Housing and Infrastructure Approval Letter

بسم الله الرحمن الرحيم

Maldives Land and Survey Authority
Ministry of Housing and Infrastructure
Male', Republic of Maldives.

މޯލްޑިވްސް ލޭންޑް އެންޑް ސާރވޭ އޮތޯރިޓީ
މިނިސްޓްރީ އޮފް ހައުސިންގ އެންޑް އިންފްރާސްޓްރަކްޗަރ
މާލެ، ދިވެހިރާއްޖެ

[illegible]

ނަންބަރު: 431-LIS/417/2017/5

ހުވަދުއަތޮޅު ދެކުނުބުރީ ހޯނޑެއްދޫ ކައުންސިލްގެ ރައީސް އަލްފާޟިލް މުޙައްމަދު އަޙާސްއަން،

ވުދުންސަލާމަށްފަހު ދަންނަވަމެވެ.

ތިޔަ އިދާރާގެ ނަންބަރު:417-ESMS/431/2017/6 (09 އޮކްޓޫބަރު 2017) ސިޓީއާއި ހަވާލާދީ ދަންނަވަމެވެ.

މިހެން ދަންނަވަނީ ދިރިއުޅުމަށް ދޫކޮށްފައިވާ ގޯތިތަކާއި ކުނިކޮށިއެޅުމަށް ތިޔަ ކައުންސިލުން ކަނޑައަޅާފައިވާ ސަރަޙައްދާއި ދެމެދު 200 ފޫޓުގެ ދުރުމިން ބެހެއްޓުމަށްފަހު (ކުނިކޮށި އެޅުމަށް ކަނޑައަޅާފައިވާ ސަރަޙައްދު ދެކުނަށް ޖެއްސުމަށްފަހު) 8072.93 އަކަފޫޓު (750 އަކަމީޓަރު)ގެ ބިން ކުނިކޮށި އެޅުމަށް ދޫކުރުމުގެ ހުއްދަދީފީމެވެ.

އިޙްތިރާމް ޤަބޫލުކުރައްވުން އެދެމެވެ.

27 މުޙައްރަމް 1439

17 އޮކްޓޫބަރު 2017

ޚާދިމުކުމް

މުޙައްމަދު ފާސިލް

ކޮމިޝަނަރ

ހުވަދުއަތޮޅު ދެކުނުބުރީ ހޯނޑެއްދޫ ކައުންސިލްގެ އިދާރާ
ގދ. ހޯނޑެއްދޫ، ދިވެހިރާއްޖެ.
ކޮޕީ: ހުވަދުއަތޮޅު ދެކުނުބުރީ އަތޮޅު ކައުންސިލްގެ އިދާރާ

Appendix E: Waste Management Centre Design

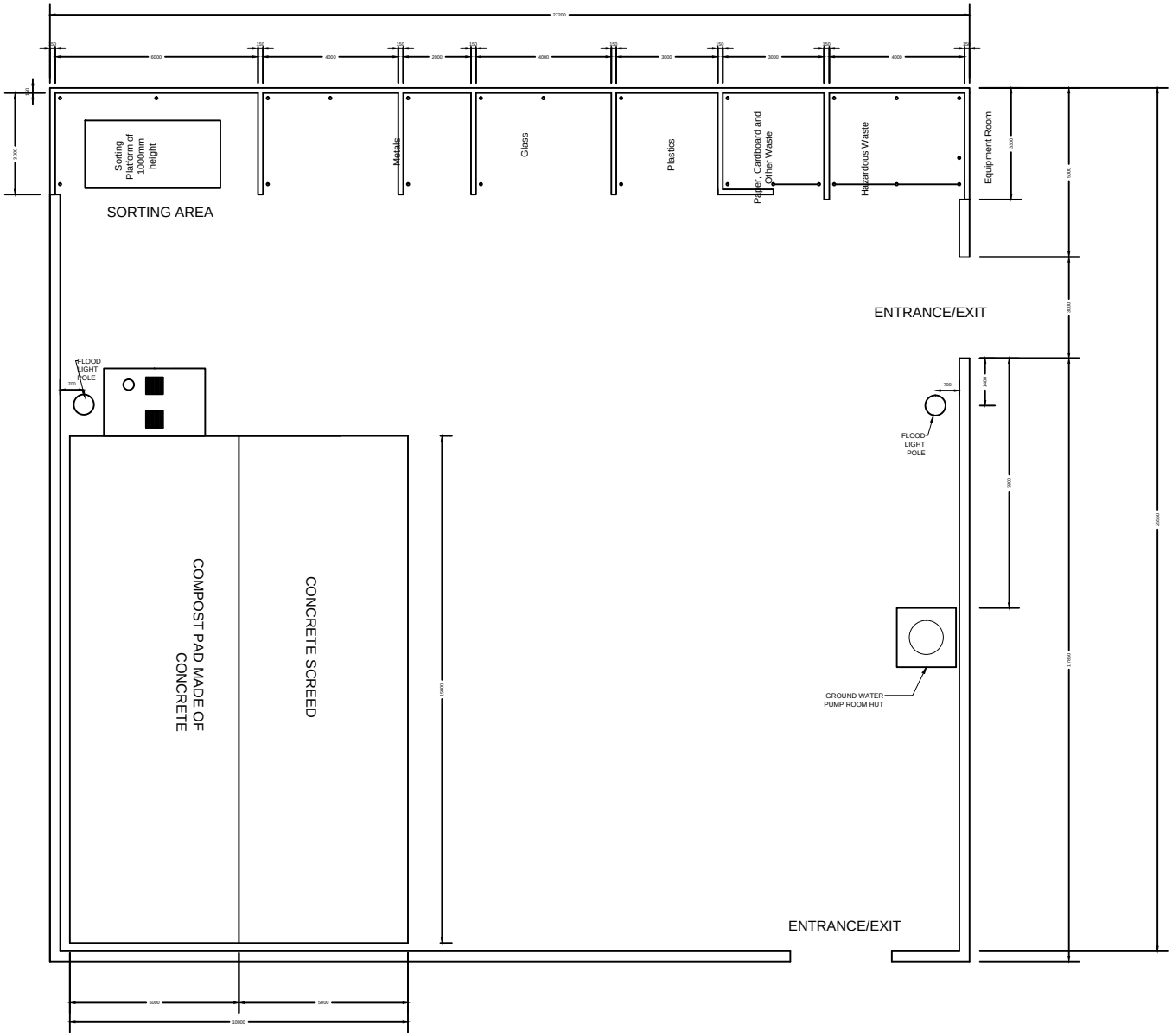
PROJECT:

CONSTRUCTION OF AN ISLAND WASTE MANAGEMENT CENTRE GDH. HOADEDHDHOO

PREPARED BY:

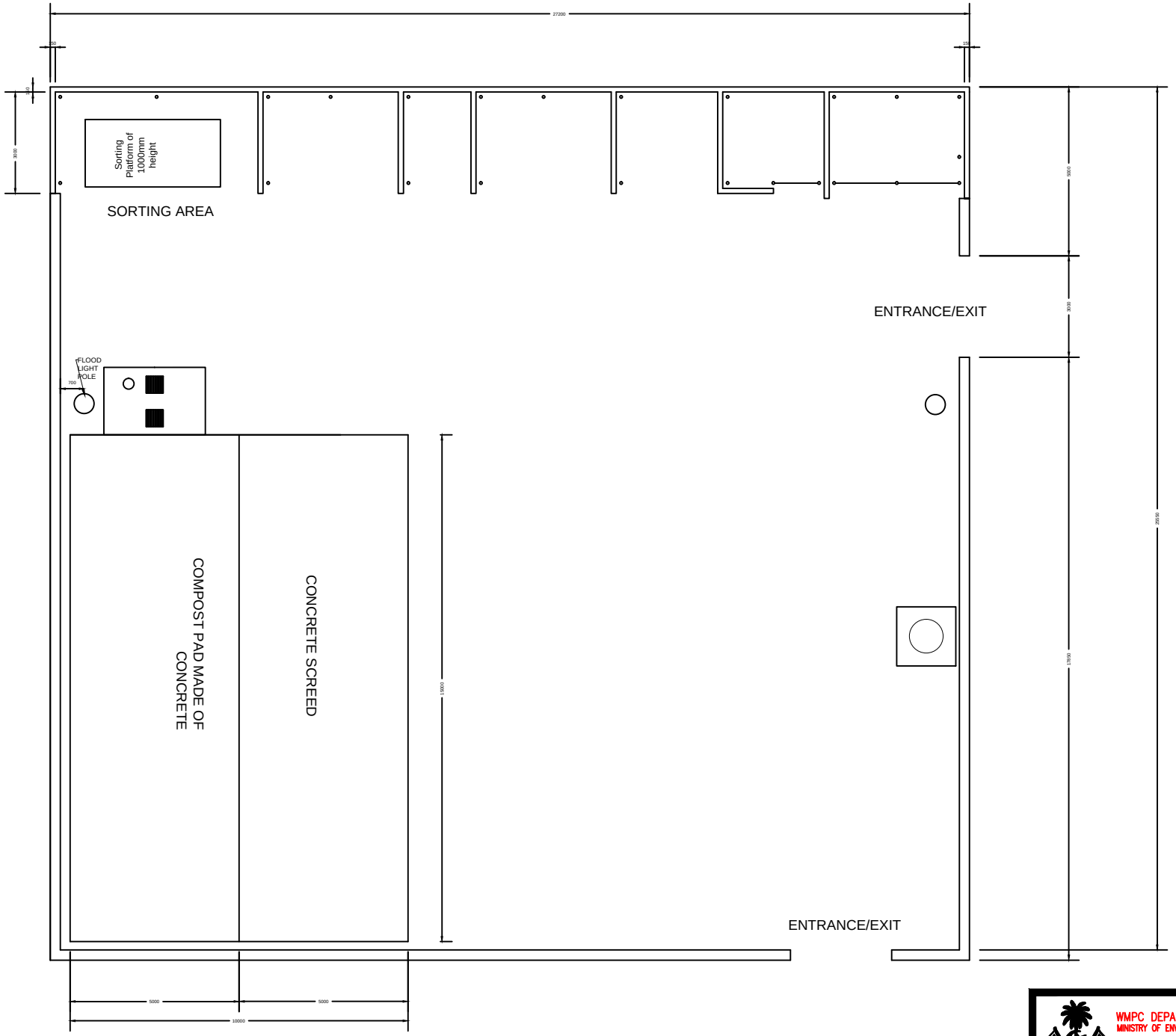
WASTE MANAGEMENT AND POLLUTION CONTROL DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY

JUNE 2016



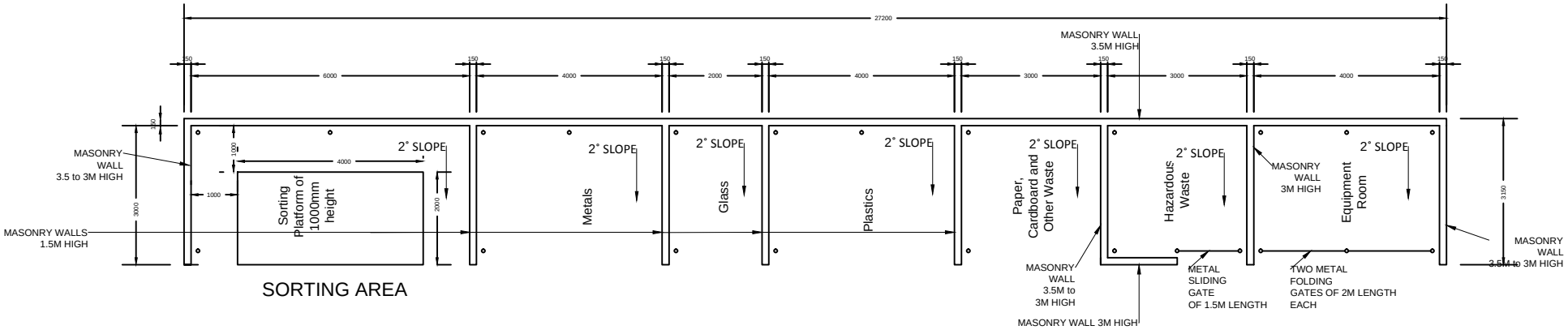
SITE LAYOUT

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



SITE LAYOUT

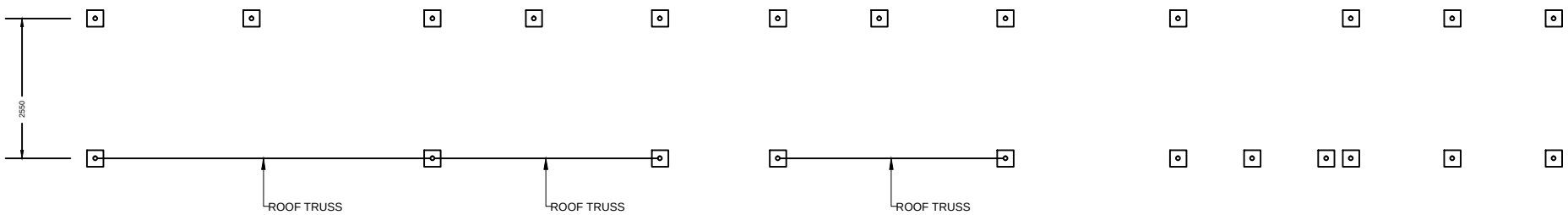
WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



SORTING AREA

COLLECTION BAY - PLANS

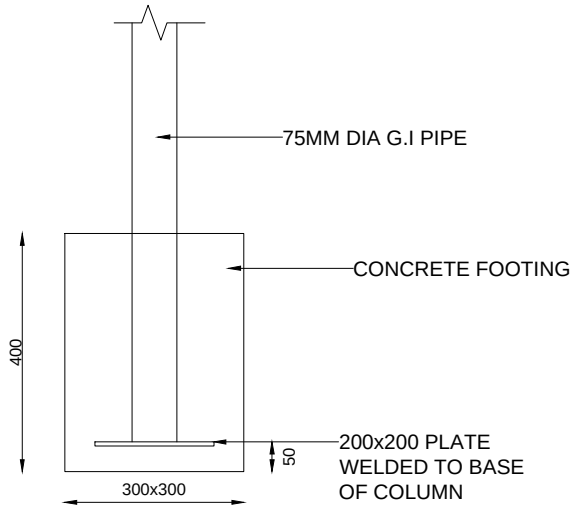
WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



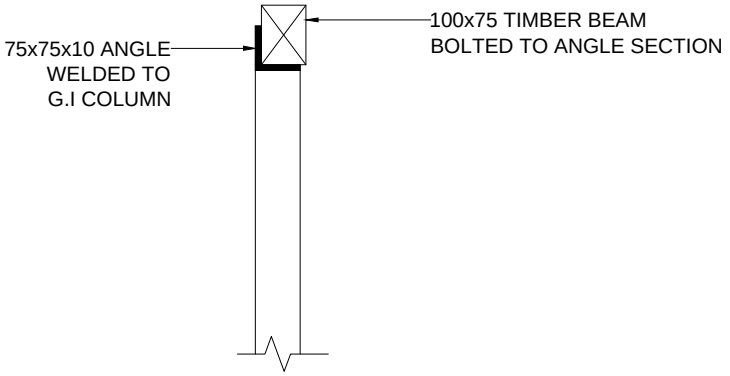
TRUSS AND FOUNDATION PLAN

COLLECTION BAY - FOUNDATION PLAN

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



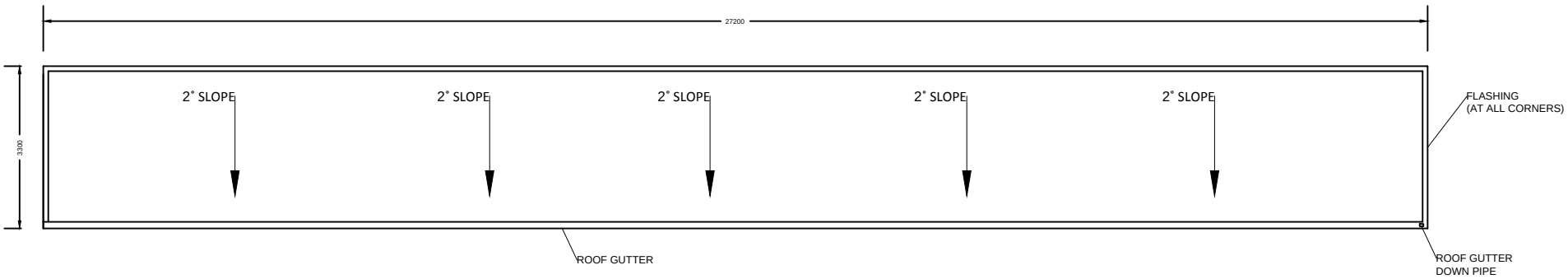
WASTE SORTING AREA
COLUMN FOUNDATION DETAIL



WASTE SORTING AREA
COLUMN ROOF FIXING

FOUNDATION AND ROOF FIXING DETAILS

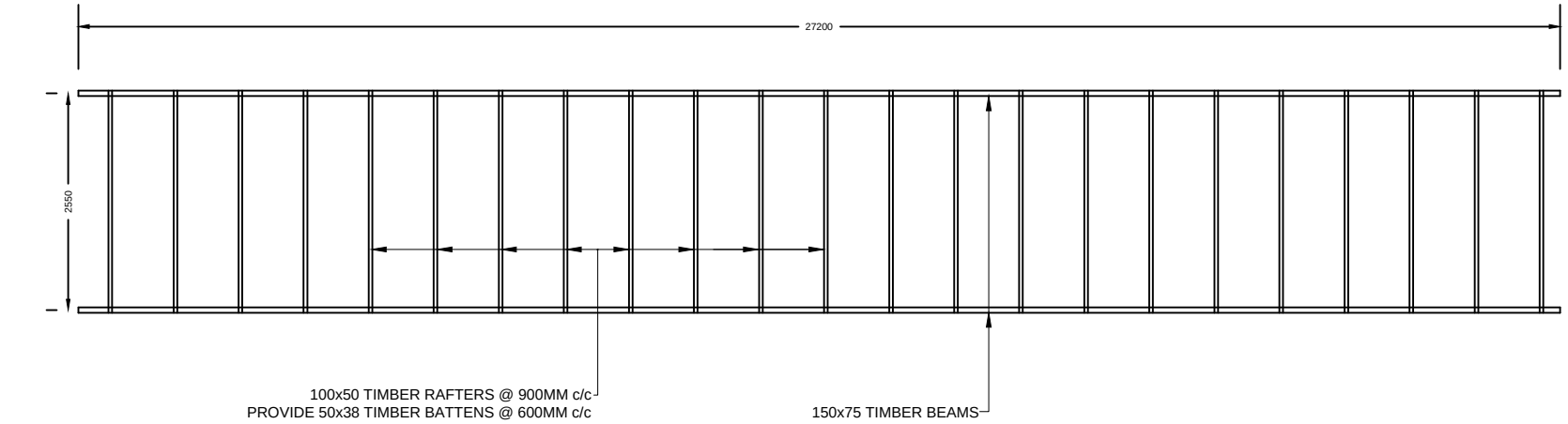
WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALE' (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



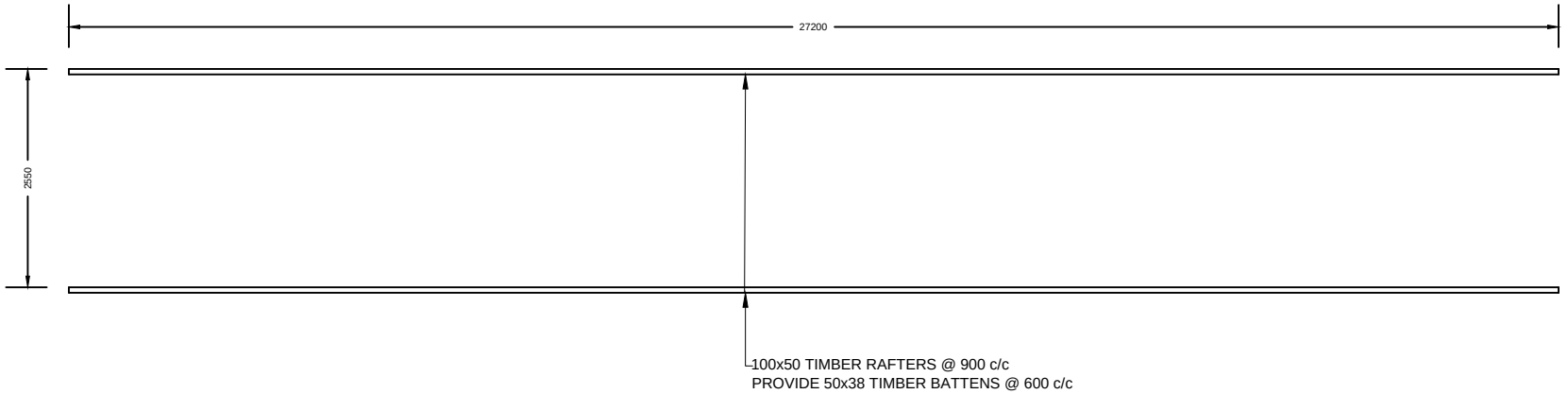
ROOF PLAN

COLLECTION BAY - ROOF PLAN

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALE' (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



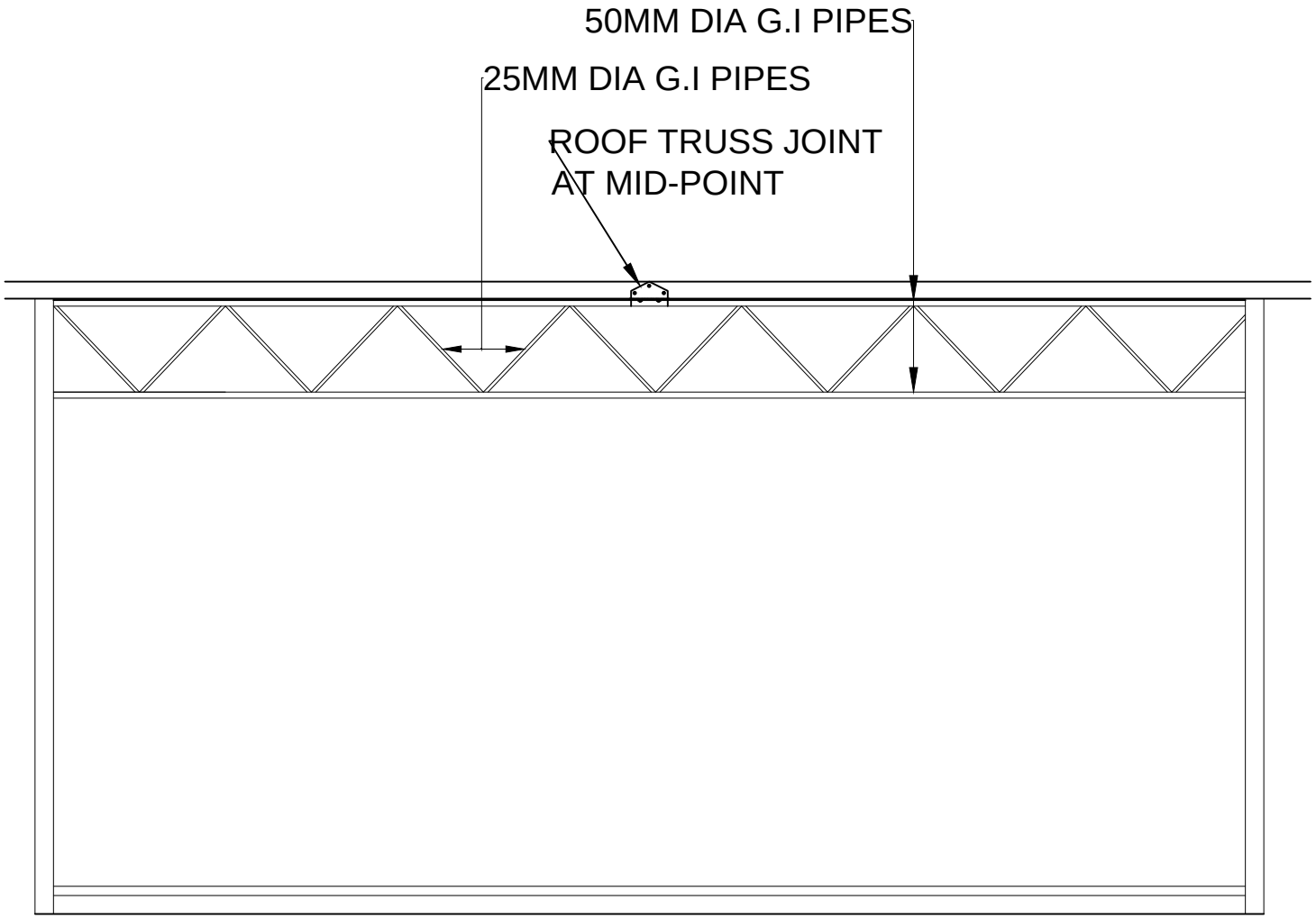
BATTENS AND RAFTERS



ROOF BEAMS

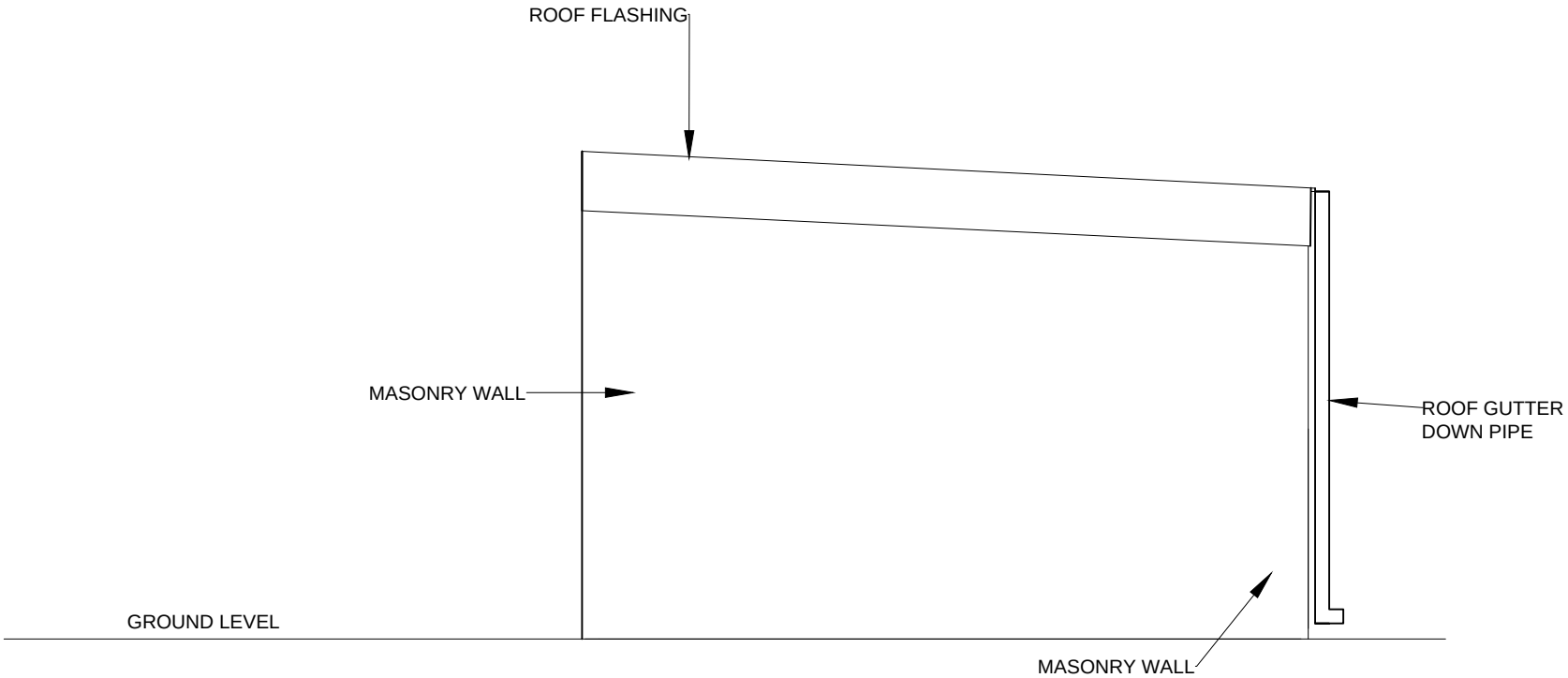
COLLECTION BAY - ROOF FRAMING PLANS

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



COLLECTION BAY - TRUSS DETAILS

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALE' (20392), REPUBLIC OF MALDIVES
TEL:3018431, 3018300, FAX:328301



COLLECTION BAY - SIDE ELEVATION

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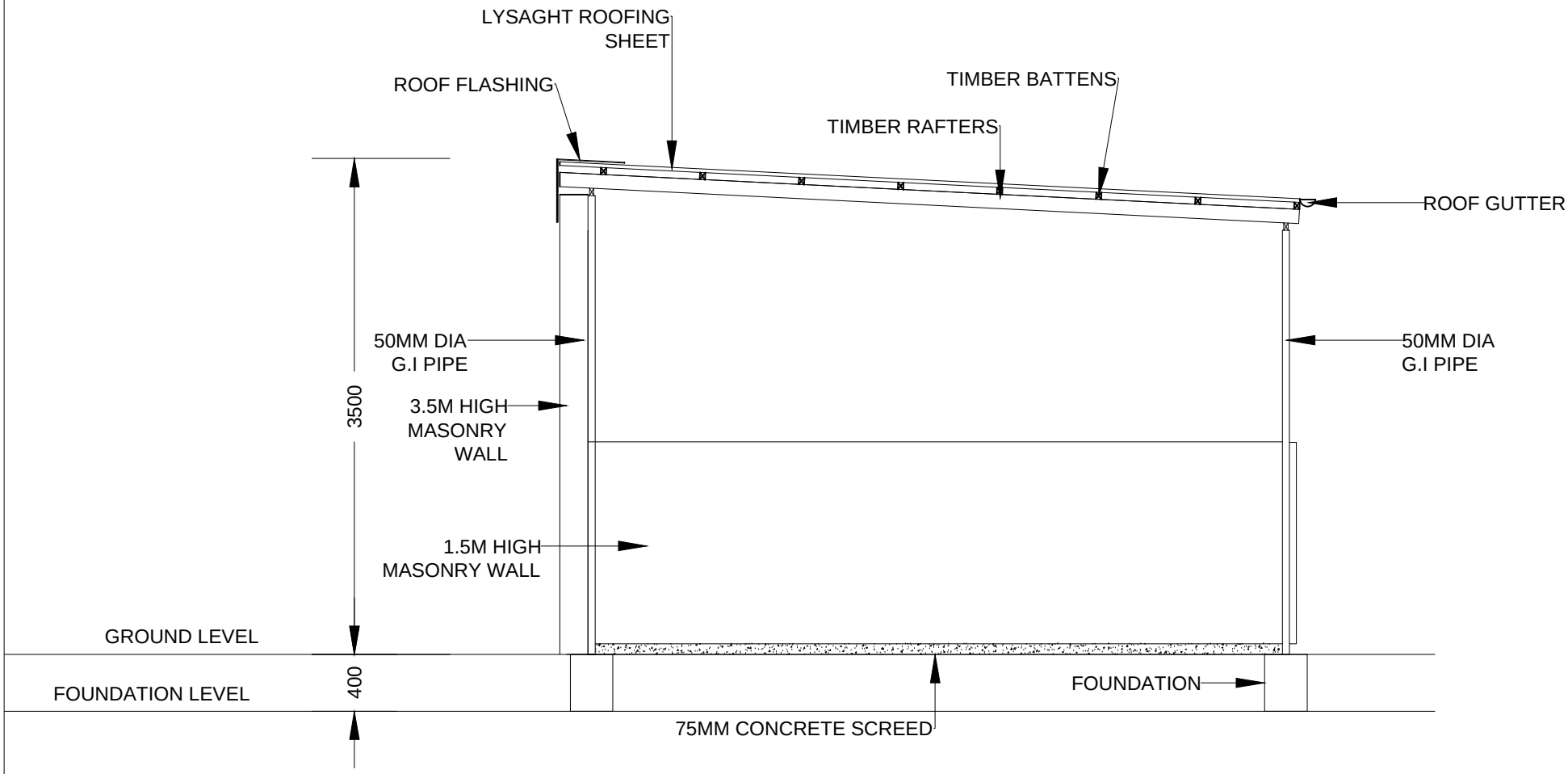

COLLECTION BAY - CROSS SECTION

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MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
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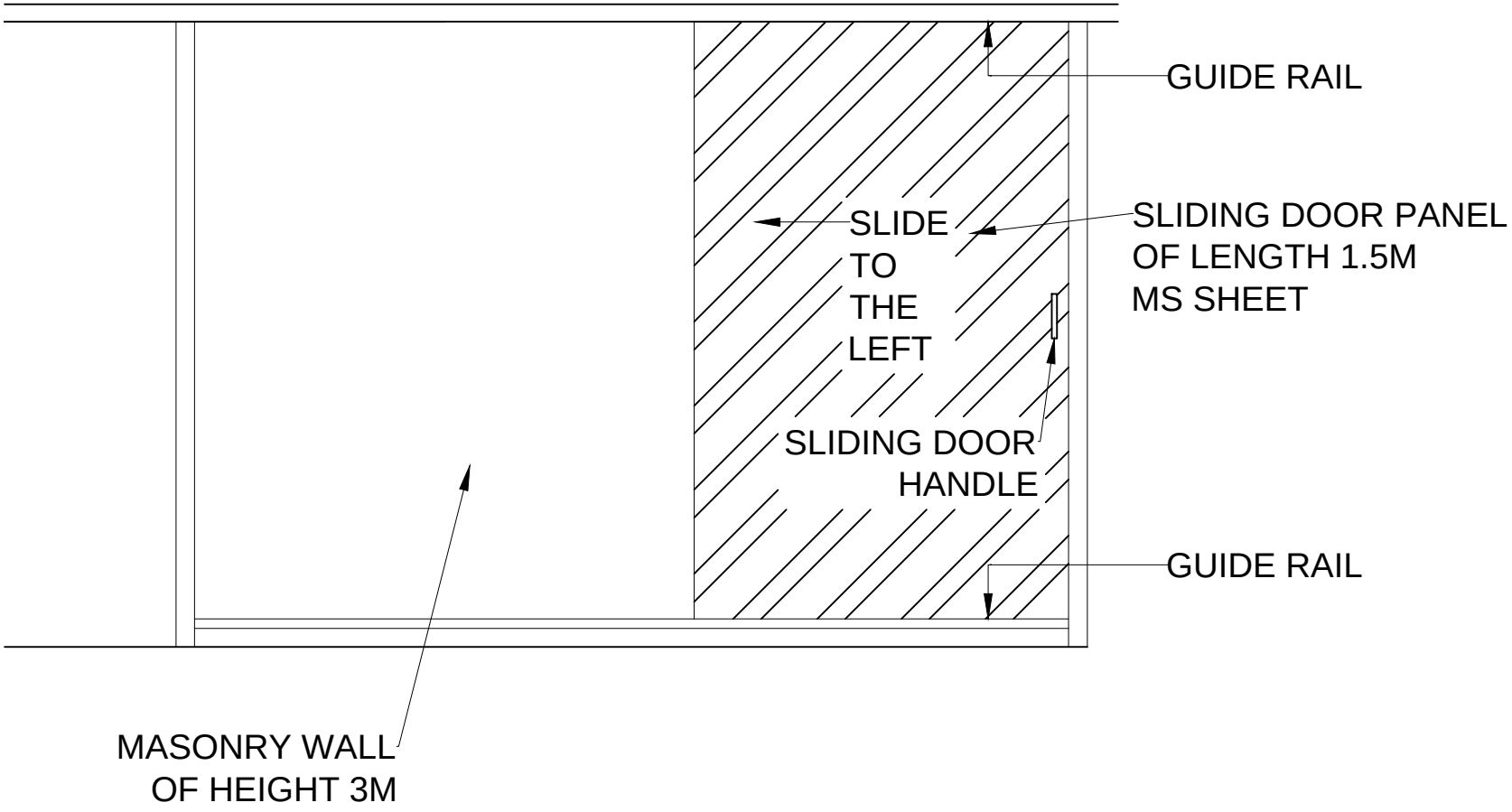

HAZARDOUS WASTE STORATE ROOM - METAL SLIDING DOOR DETAIL

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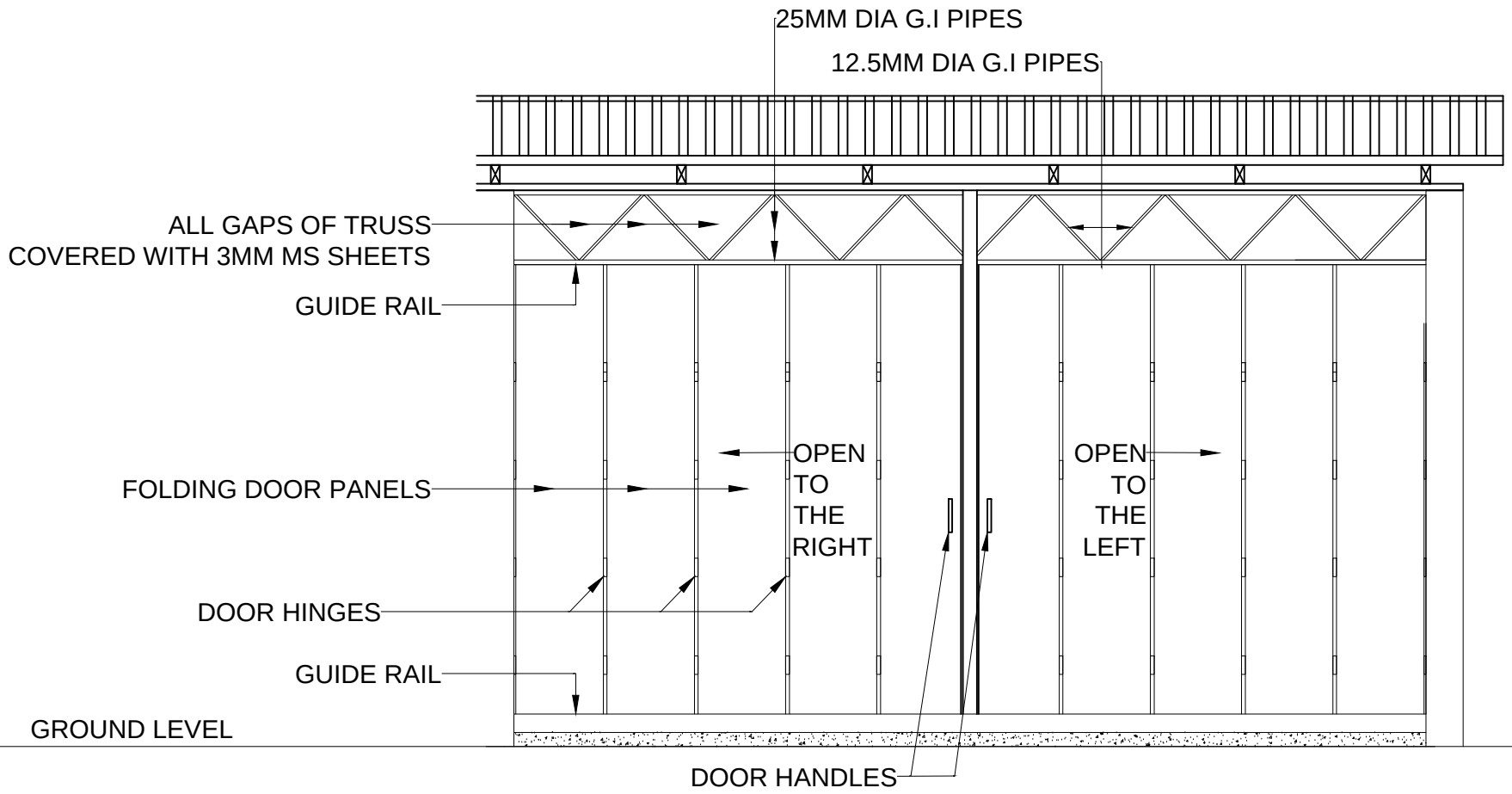

NOTE: ALL WELDS FOR TRUSS MEMBERS
ARE 5MM FILLET WELDS

EQUIPMENT ROOM - METAL SLIDING DOOR DETAIL

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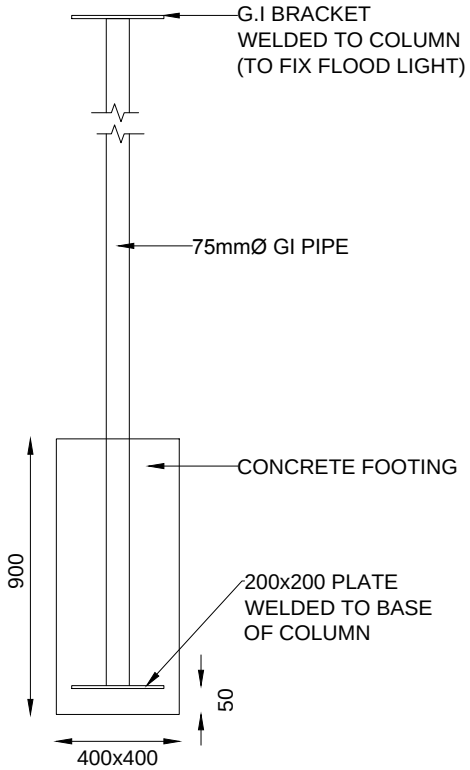
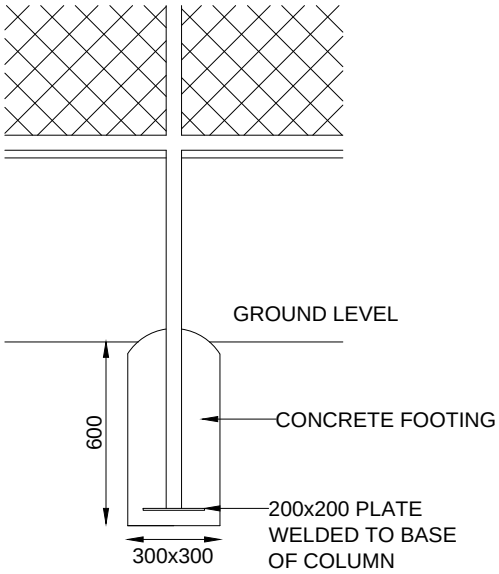
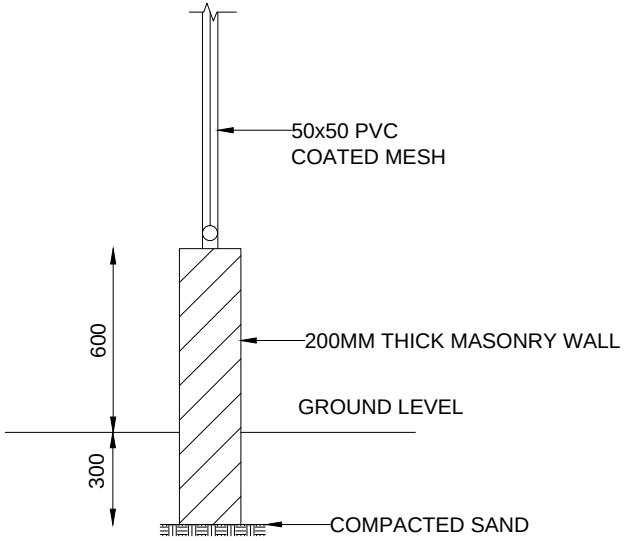


FLOOD LIGHT
POLE DETAIL



PERIMETER FENCE
FOUNDATION DETAIL



PERIMETER WALL
FOUNDATION DETAIL

FOUNDATION AND ROOF FIXING DETAILS

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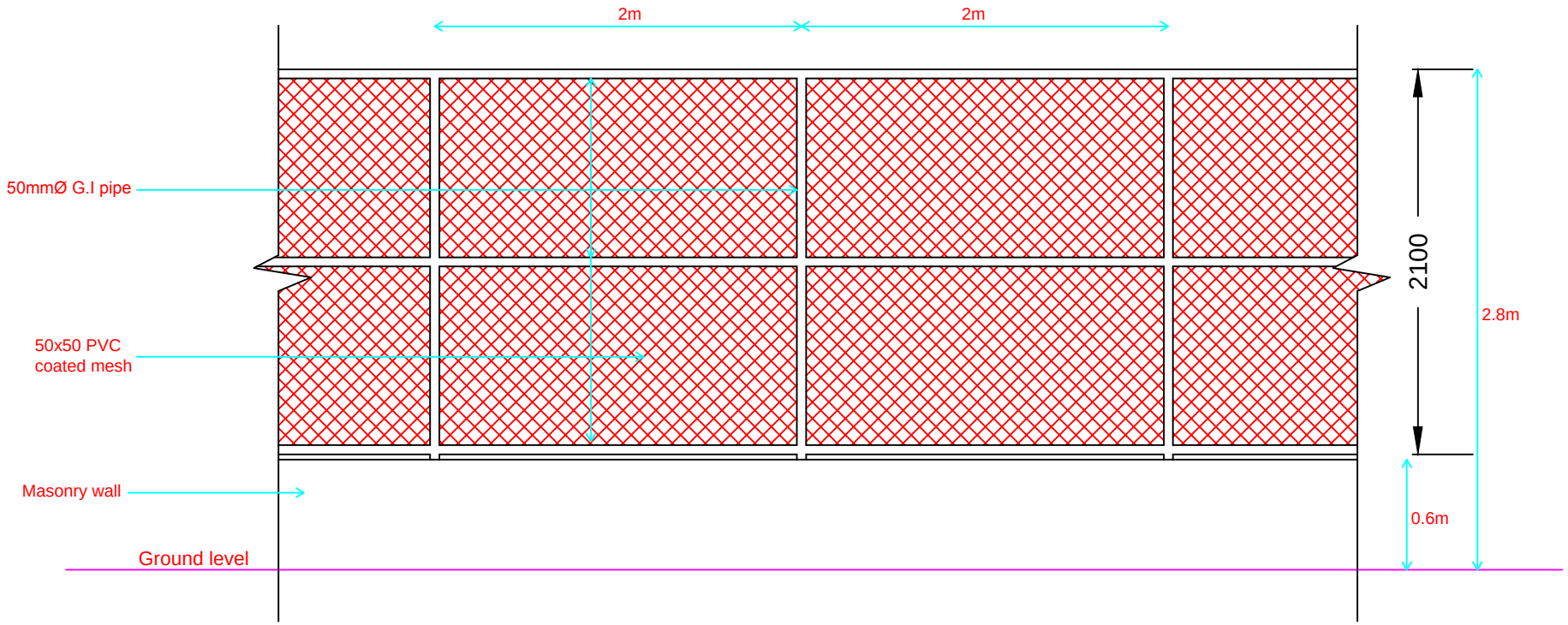

NOTE: ALL WELDS ARE 5mm FILLET WELD AROUND MEMBER

PERIMETER FENCE

FENCE DETAILS

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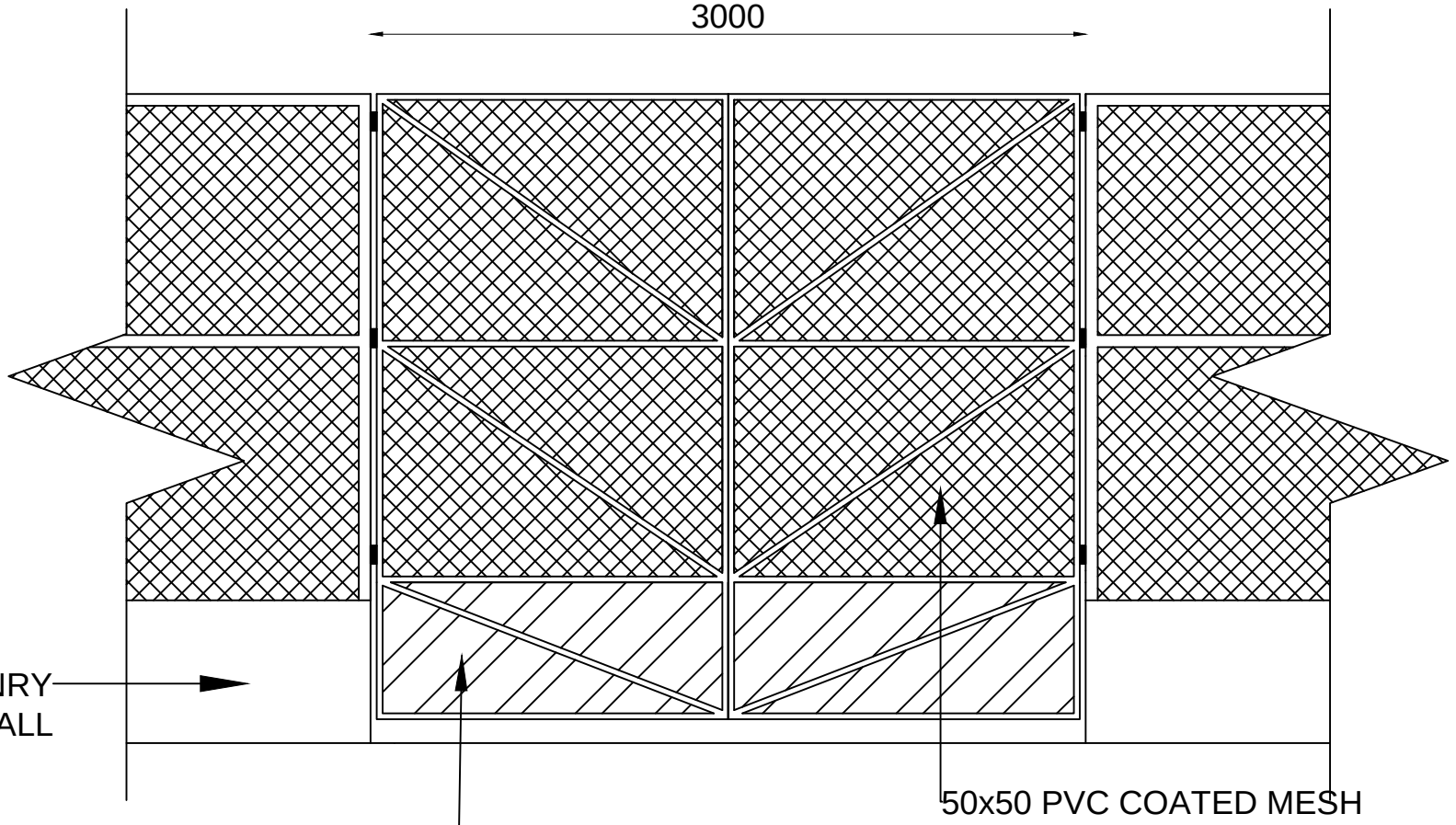

NOTE:
- DOOR IS MADE FROM 25MM DIA GI PIPE
- ALL WELDS ARE 5MM FILLET WELDS AROUND MEMBER

MAIN GATE

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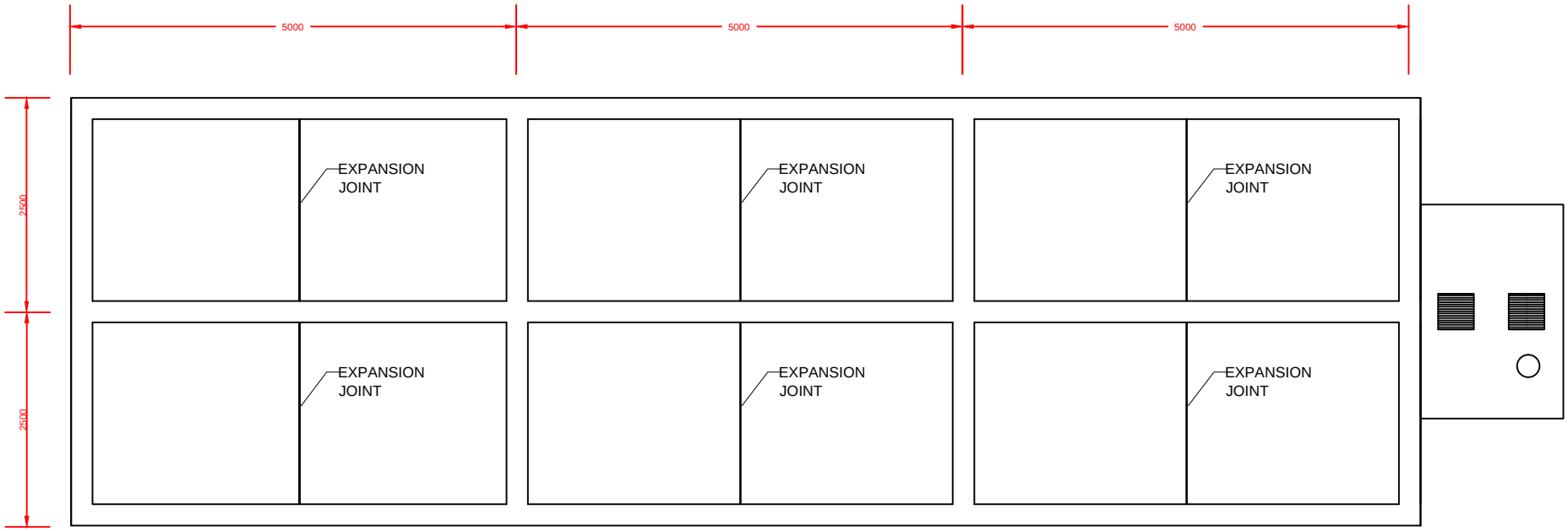

COMPOST SLAB - JOINTS AND SPACINGS

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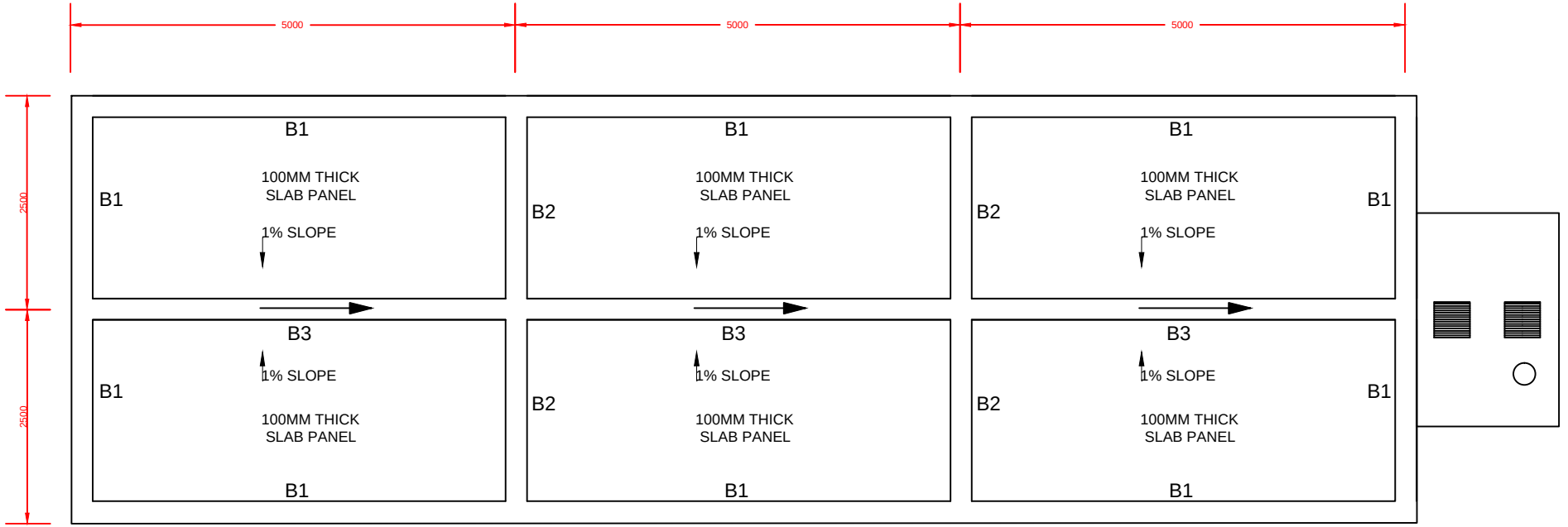

COMPOST SLAB - PLAN

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
MAAFANNU, MALÉ (20392), REPUBLIC OF MALDIVES
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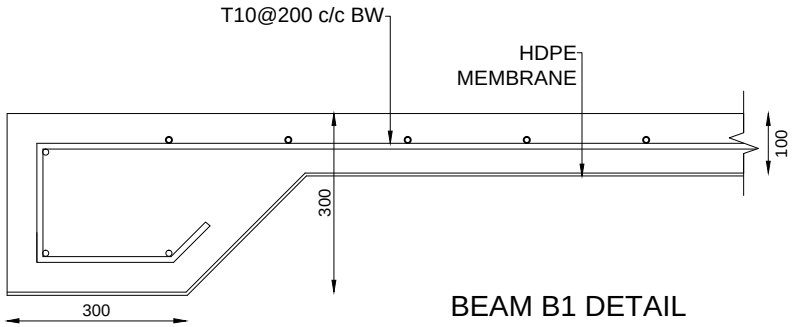
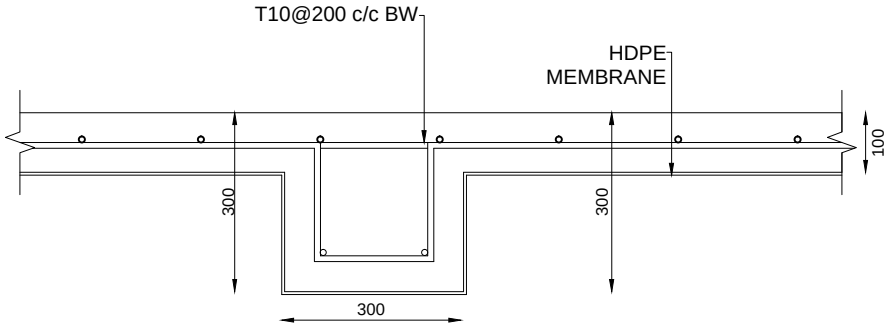
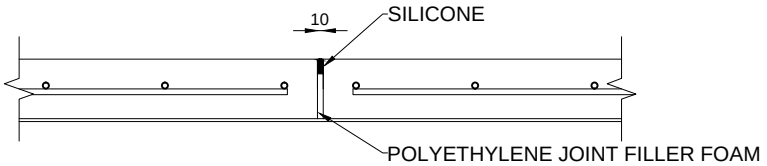


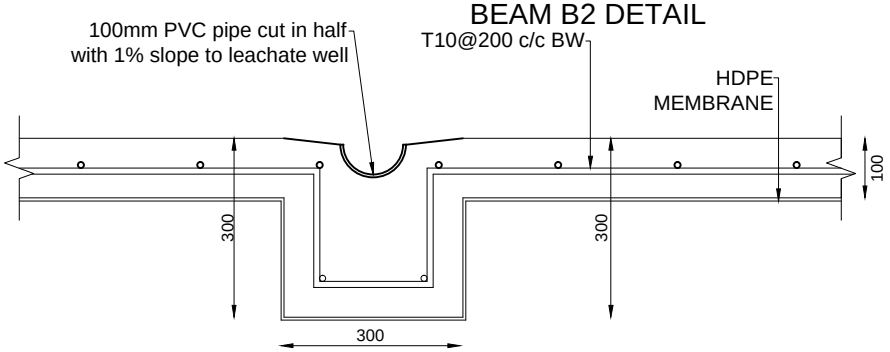
BEAM B1 DETAIL



BEAM B2 DETAIL



SLAB EXPANSION
JOINT DETAIL



BEAM B3 DETAIL

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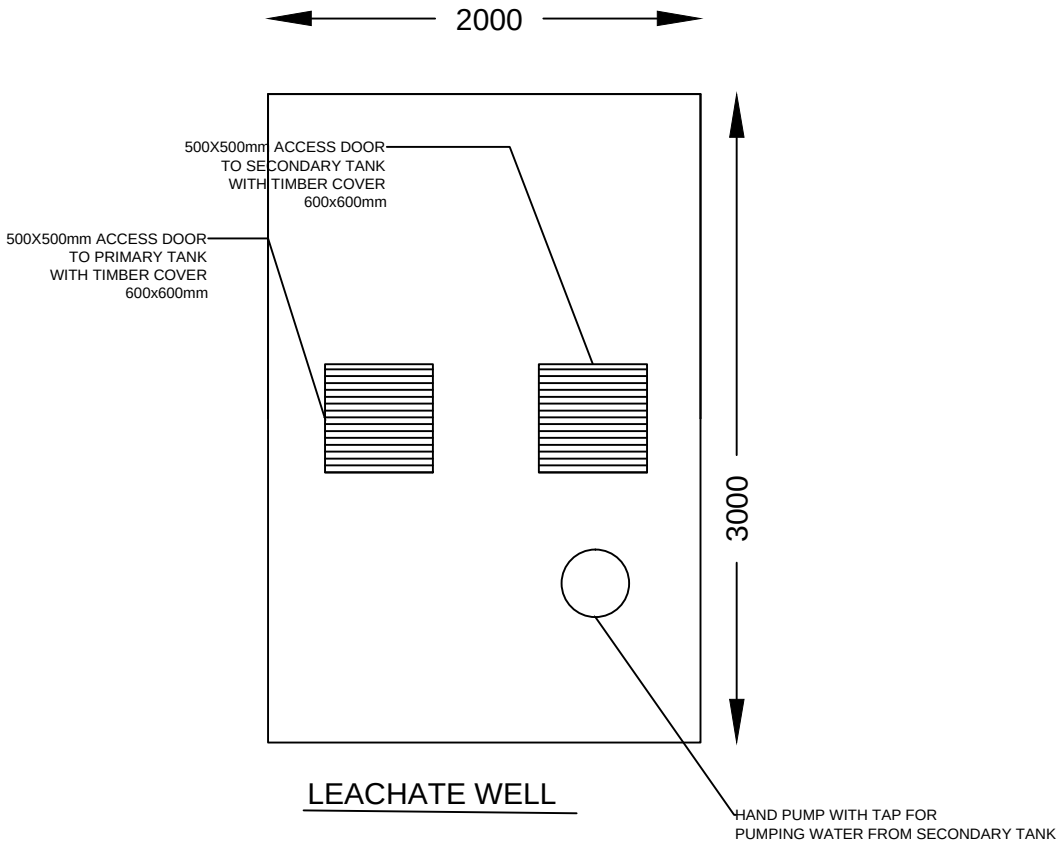
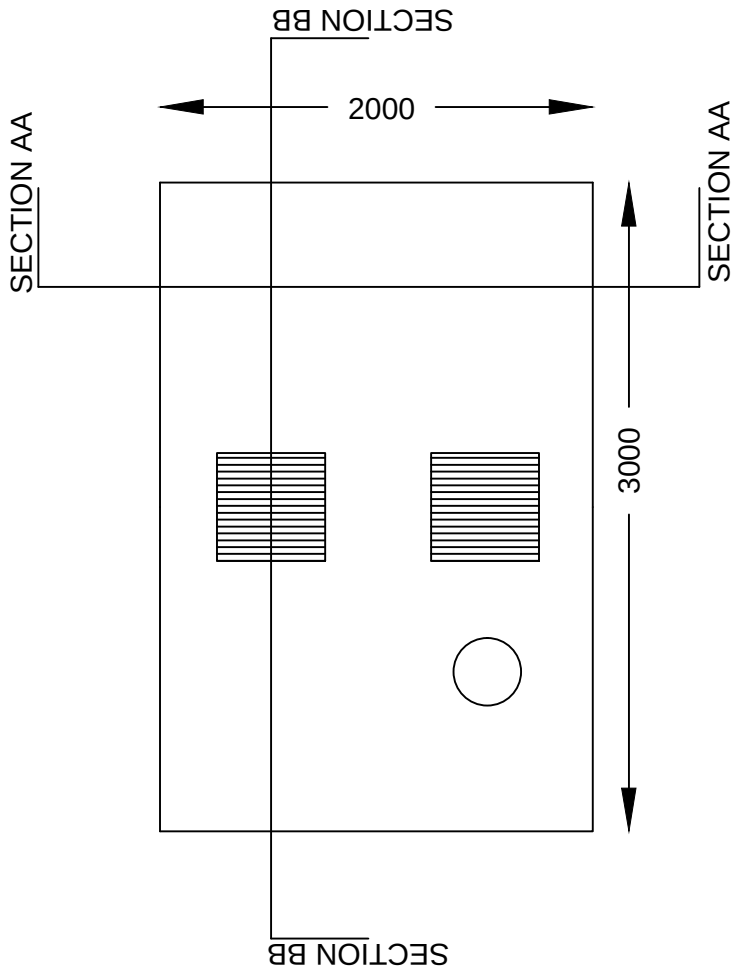
COMPOST SLAB BEAM DETAILS



LEACHATE WELL



LEACHATE COLLECTION TANK

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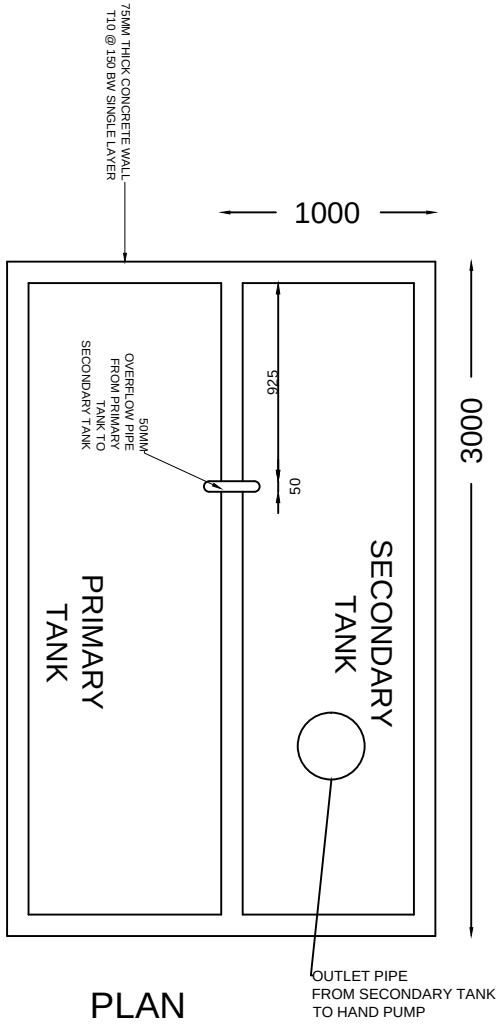
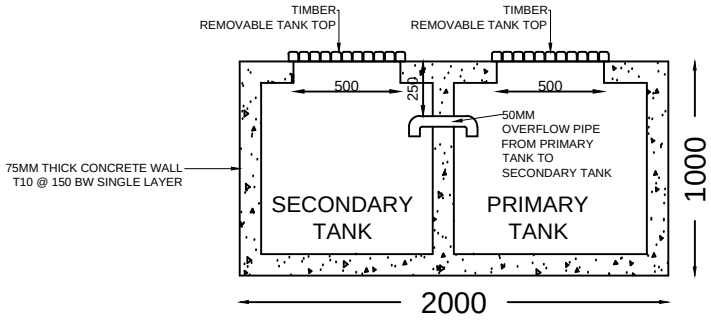
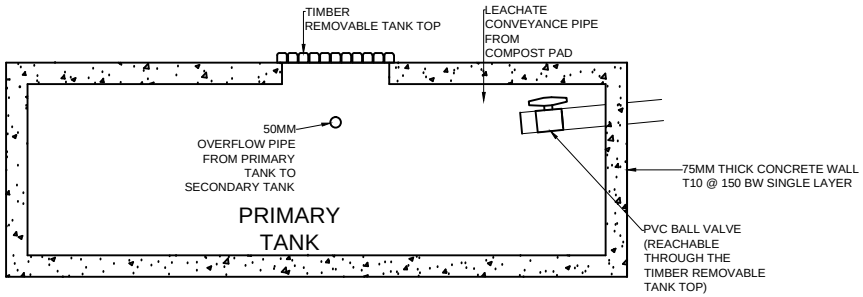


PLAN



SECTION AA



SECTION BB

LEACHATE WELL DETAILS

LEACHATE COLLECTION TANK - DETAILS

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MAAFANNU, MALE' (20392), REPUBLIC OF MALDIVES
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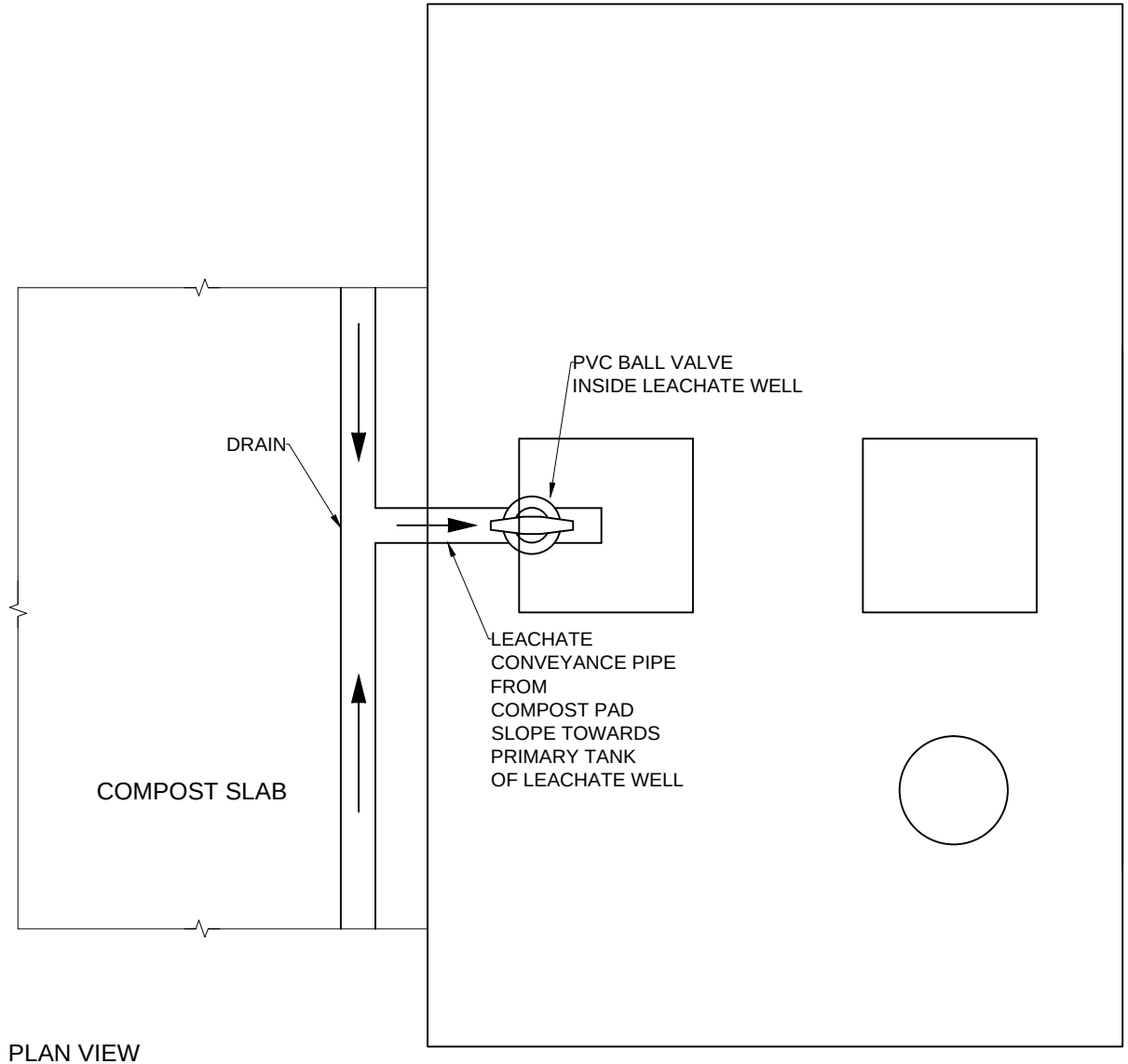

PLAN VIEW

WMPC DEPARTMENT
MINISTRY OF ENVIRONMENT AND ENERGY
GREEN BUILDING, HANDHUVAREE HINGUN,
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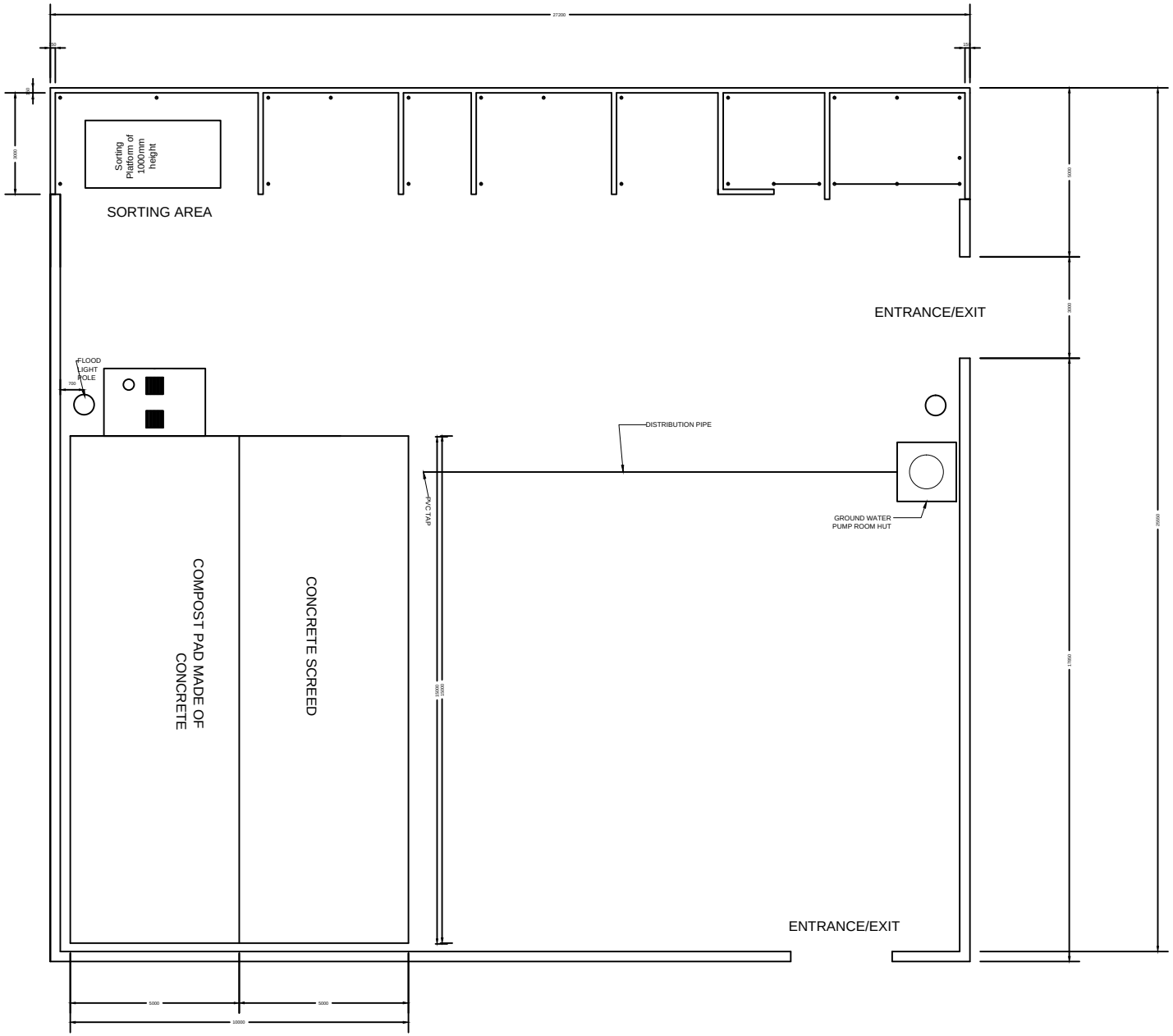
DRAIN TO LEACHATE COLLECTION TANK - CONNECTION DETAILS



PLUMBING LAYOUT

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MINISTRY OF ENVIRONMENT AND ENERGY
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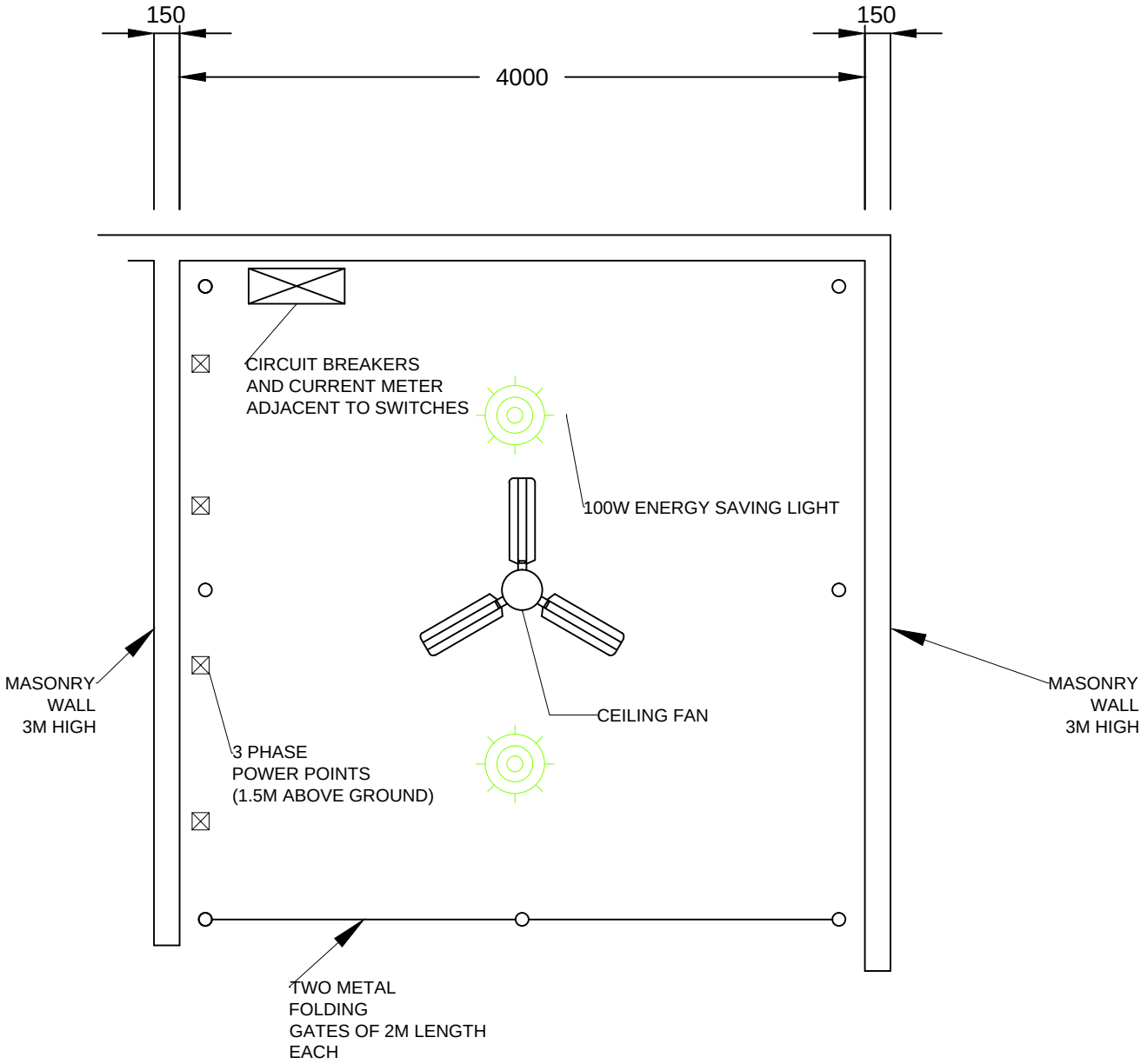

ELECTRICAL LAYOUT - EQUIPMENT ROOM

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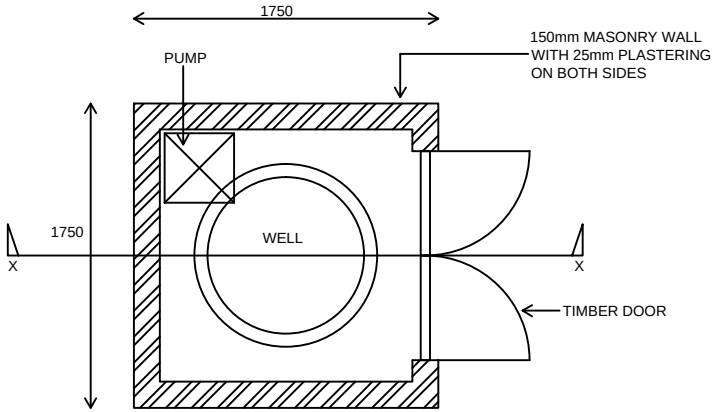
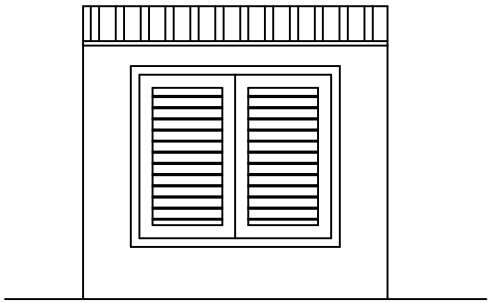
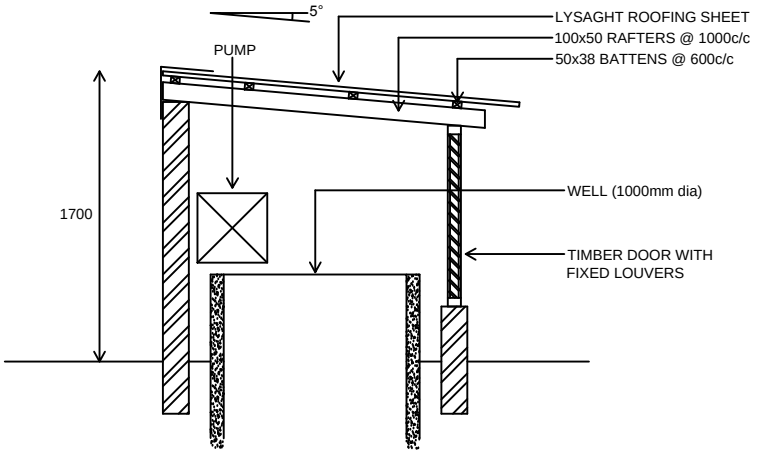


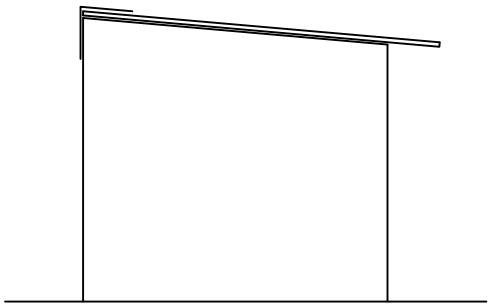
PUMP ROOM HUT



FRONT ELEVATION



SECTION X-X



SIDE ELEVATION

GROUND WATER PUMP ROOM HUT DETAILS

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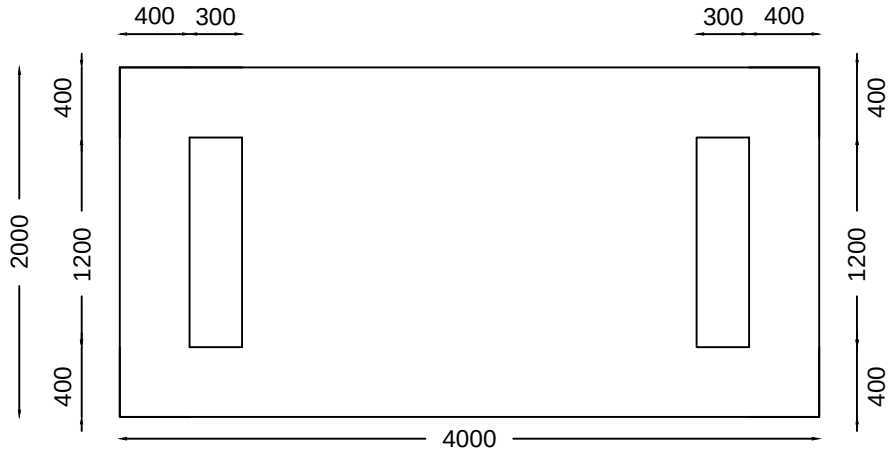

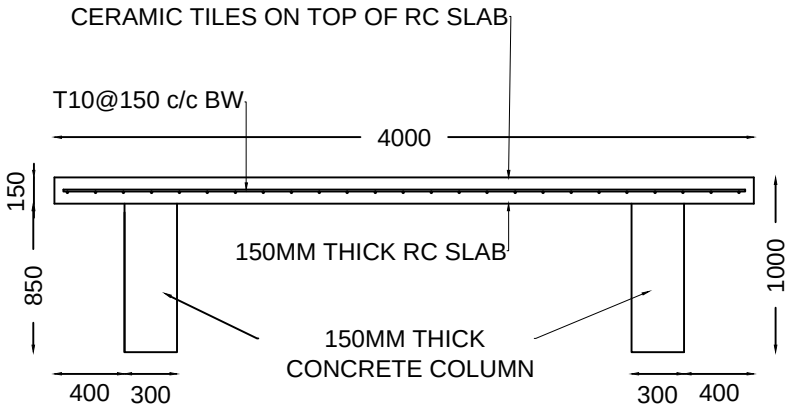

SORTING AREA - SORTING PLATFORM DETAILS

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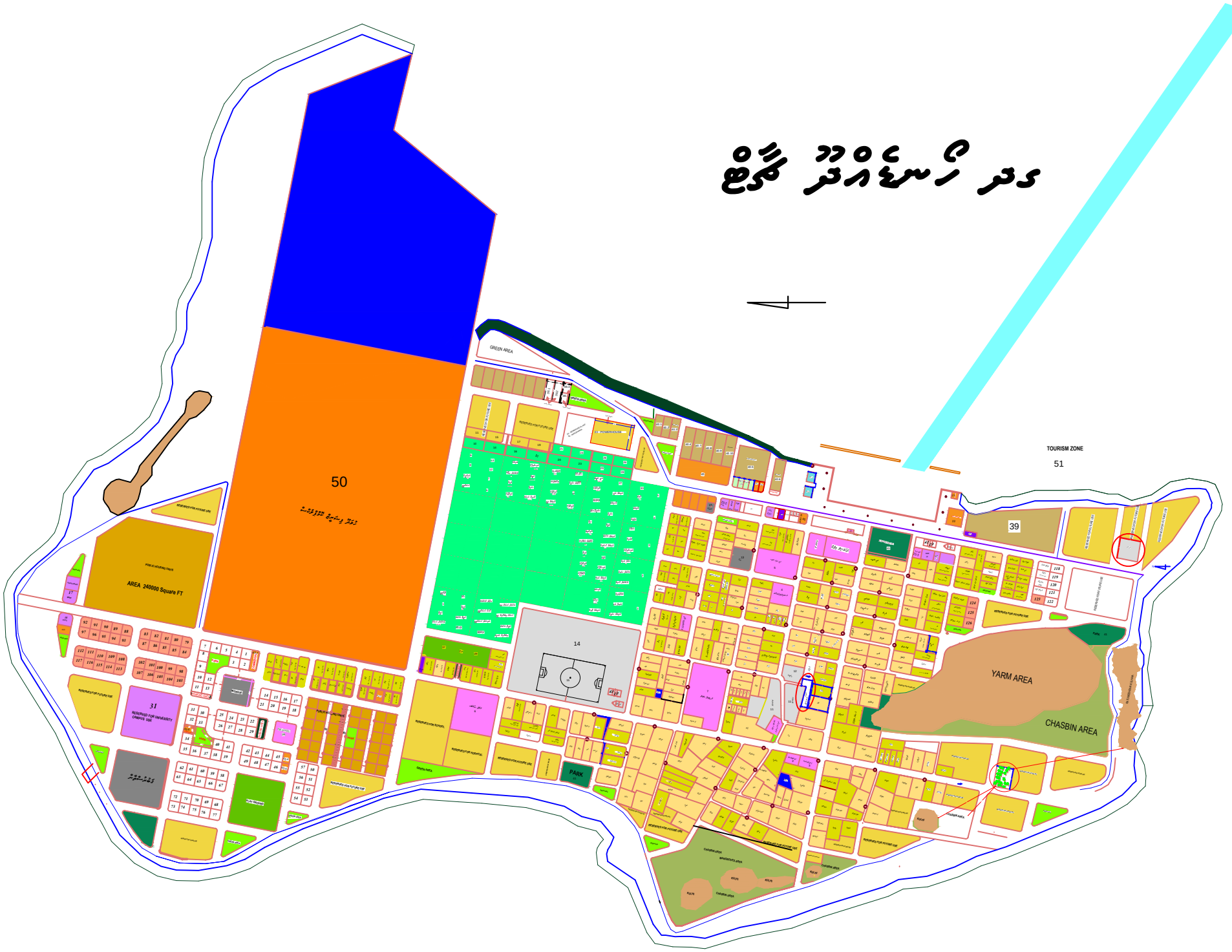
Appendix F: Land Use Plan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AREA 240000 Square FT
31
14
PARK
39
TOURISM ZONE
51
YARM AREA
CHASBIN AREA
GREEN AREA