



MANJA PAMODZI FOUNDATION LIMITED

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE PROPOSED
CONSTRUCTION AND OPERATION OF THE RECYLING AND VALUE CHAIN
ENHANCEMENT PROJECT BY MANJA PAMODZI FOUNDATION LIMITED IN
LUSAKA**

NOVEMBER 2024

TABLE OF CONTENTS

LIST OF TABLES	iii
LIST OF FIGURES	iii
LIST OF ACRONYMS AND ABBREVIATIONS	iv
EXECUTVE SUMMARY	v
1.0 INTRODUCTION	1
1.1 Project Objectives	1
1.2 Summary Description of the Project Including Project Rationale	1
1.3 The Developers Physical Address and the Contact Person	3
1.4 Particulars of MPFL Board Members.....	3
1.5 Track Record	3
1.6 Brief Description of the Location	4
1.7 Total Project Cost/Investment	4
1.8 Proposed Project Implementation Date	4
2.0 LEGAL AND POLICY FRAMEWORK.....	5
2.1 Policy, Legal and Institutional Framework.....	5
3.0 DESCRIPTION OF THE PROJECT	25
3.1 Location	25
3.2 Nature of the Project.....	26
3.3 Main activities	27
3.4 Technology/Methods.....	29
3.5 Project Facilities	29
3.6 Raw Materials.....	30
3.7 Hazardous Materials, Equipment, and their Storage on Site	31
4.0 PROJECT ALTERNATIVES	32
4.1 Project or No-Project alternatives	32
4.2 Site Alternatives	32
4.4 Design Alternatives	33
4.4 Sources of Water Alternatives	33
4.5 Sewage/wastewater Management Alternatives	33
4.6 Power Supply Alternatives.....	33
4.7 Technology Alternatives	34
4.8 List of Chosen Alternatives in Order of Preference	34
5.0 DESCRIPTION OF BASELINE ENVIRONMENT	36
5.1 Location	36
5.2 Physical Environment.....	36

5.3 Socio-economic baseline	38
6.0 STAKEHOLDER CONSULTATION	40
7.0 ENVIRONMENTAL AND SOCIAL RISKS, IMPACTS AND MITIGATION MEASURES	41
8.0 IMPLEMENTATION ARRANGEMENTS AND ESMP SUPERVISION AND MONITORING	55
8.1 Implementation Arrangement	55
8.2 ESMP Budget	55
8.3 Monitoring and Supervision	56
8.1 Incident Reporting.....	57
9.0 DEMOBILIZATION, COMMISSIONING, AND MAINTENANCE PLAN	58
10.0 REFERENCES	59

LIST OF TABLES

Table 1: Summary of impacts and mitigation measures	viii
Table 2 Particulars of Board Members	3
Table 3: Relevant Legislation, Interpretation, and compliance	7
Table 4: Relevant World Bank Environmental and Social Standards.....	21
Table 5: reference coordinates for the proposed project site.....	26
Table 6: Raw materials for the site set up	30
Table 8 Results of dust/particulate matter from the project site.....	36
Table 9: Laboratory Results of Groundwater.....	37
Table 10:Noise level readings at different points within the proposed site.....	38
Table 12: Summary of Environmental and Social Risks and Mitigation Measures.....	42
Table 11: Implementation arrangement.....	55
Table 12: Monitoring Schedule	56
Table 13: Demobilization, Decommissioning and Maintenance Plan.....	58

LIST OF FIGURES

Figure 1: Arial view of the proposed project sit.....	25
Figure 2: Actual images of the Manja Pamodzi recycling value chain and enhancement project.	25
Figure 3: Organogram for the Manja Pamodzi recycling and value chain enhancement project.	28
Figure 4: process flow diagram for the project - from collector to off taker.....	29
Figure 5: warehouse design proposal for the project.....	30

LIST OF ACRONYMS AND ABBREVIATIONS

8NDP	Seventh National Development Plan
AIDS	Acquired Immune Deficiency Syndrome
CBD	Central Business District
CBO	Community-Based Organizations
COVID-19	Coronavirus Disease of 2019
EAC	Environmental Assessments Committee
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EPB	Environmental Project Brief
EPPCA	Environmental Protection and Pollution Control Act
ESIA	Environmental and Social Impact Assessment
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
FGRM	Feedback Grievance Redress Mechanism
GBV	Gender-Based Violence
GRM	Grievance Redress Mechanism
GRZ	Government of the Republic of Zambia
HDPE	High Density Polyethylene
HIV	Human Immunodeficiency Virus
HPLC	High Performance Liquid Chromatography
LDPE	Low Density Polyethylene
MoH	Ministry of Health
MPFL	Manja Pamodzi Foundation Limited
NAEP	National Environmental Action Plan
NCS	National Conservation Strategy
NGO	Non-Governmental Organization
NPE	National Policy on Environment
NPF	National Performance Framework
NWASCO	National Water Supply and Sanitation Council
PP	Polypropylene
PCPW	Post-Consumer Plastic Waste
PCU	Project coordinating Unit
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
RTSA	Road Transport and Safety Agency
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SOP	Standard Operating Procedures
STD	Sexually Transmitted Diseases
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
VAT	Value Added Tax
WARMA	Water Resources Management Authority
WB	World Bank
WB EHGS	World Bank Environmental, Health, and Safety Guidelines
WDC	Ward Development Committees
ZB	Zambian Breweries
ZEMA	Zambia Environmental Management Agency
ZEMA NRO	Zambia Environmental Management Agency Northern Region Office
ZESCO	Zambia Electricity Supply Company

EXECUTIVE SUMMARY

a. Background

The Manja Pamodzi initiative was founded as a project initiated by Zambian Breweries (ZB) Plc. and implemented in selected peri-urban communities in the City of Lusaka. The project implementation by ZB began in February 2015 and in November 2015 the initiative was joined by Millennium Challenge Account Zambia (MCAZ) under a co-funding agreement of United States Dollars \$1,841,006.30 in total. Since 2018, the Initiative has since been registered as a Company limited by guarantee, Manja Pamodzi Foundation Limited. The establishment of Manja Pamodzi Foundation Limited as a stand-alone recycling entity is meant to enable multi stakeholder participation and increased participation in the recycling value chain. This will further enable income generation for expansion of its activities and outreach with regards to the number of areas, beneficiaries, overall cleaner communities, and a growing recycling industry.

To date, ZB Plc has further invested ZMW 2,500,000 in the initiative which has further established 13 community collection points in and around the peri-urban and urban areas of Lusaka. The historic and present sites in total have a cumulative total of over 900 collectors, 75% of whom are women and youth, who have been trained in business management, occupational health, and safety (OHS), capacitated with equipment, and provided with Personal Protective Equipment (PPE) to facilitate enhanced and safe collection of Post-Consumer Plastic Waste (PCPW). Since then, over 24,000 tons of recyclable post-consumer waste including cardboard, polyethylene terephthalate (PET), low density polyethylene (LDPE), high density polyethylene (HDPE) and Aluminum cans have been collected. This has generated cumulative income of over ZMW 12,000,000 for aggregators and collectors.

b. Project Rationale

Lusaka faces significant waste management challenges, with more than 50% of waste uncollected and many urban households resorting to burying, burning, or dumping waste, leading to environmental hazards. The Manja Pamodzi initiative addresses these issues by promoting good waste management practices through increased collection and recycling of post-consumer packaging waste (PCPW) in lower-income, industrial, and commercial areas. This program not only reduces street waste but also provides job opportunities, particularly for women in the urban poor sector.

Since its inception in 2015, Manja Pamodzi has collected over 24,000 tons of recyclable waste with twelve aggregator and thirteen collection points. However, the initiative is limited by its dependency on Zambian Breweries (ZB) funding, posing a challenge to its sustainability. There is an urgent need to expand and upscale our operations to processor level. By securing additional grants and funders, the initiative can scale up, generate income, and create a greater impact on waste management, job creation, and livelihoods. Without addressing this funding limitation, the initiative's growth and effectiveness will remain constrained.

c. Project Objectives

Main Objective

The main objective is to increase tonnages of recovered PCPW and improved solid waste management practices for a cleaner and safer environment while providing business opportunities for the vulnerable in peri-urban communities.

Specific Objectives:

The specific project objectives are as highlighted below:

- To expand the sustainable collection and recycling value chain for post-consumer packaging waste in Lusaka
- To increase the number of waste collectors in Lusaka and increase their potential earnings through material value addition.
- To create awareness of the issues and opportunities surrounding waste through educating the local population about the value and management of packaging waste, including the environmental health and safety (EHS) risks and impacts.

d. Summary Description of the Project

The proposed project is a recycling value chain enhancement project by Manja Pamodzi Foundation Limited (MPFL). Manja Pamodzi continues to be community-driven initiative that is aimed at creating collector networks and aggregator sites that enhance the recycling value chain through the collection of post-consumer packaging waste (PCPW) such as Polyethylene Terephthalate (PET), High Density Polyethylene (HDPE), Low Density Polyethylene (LDPE), Polypropylene (PP), Conical Cartons, Cardboard, Paper and Aluminum Cans. This will be achieved by bringing together the community and relevant stakeholders to participate in activities that educate and sensitize, clean up the environment and at the same time create enterprise opportunities. The result of these activities is increased tonnages of recovered PCPW and improved solid waste management practices for a cleaner and safer environment while providing business opportunities for the vulnerable in peri-urban communities.

For this project, the initiative proposes to set up aggregation, pre-crushing and bailing facilities in Lusaka. The aggregation, crushing and bailing facilities will be situated in a high density or high waste generation areas, where networks of collectors will be established around the sites. This will enable the initiative to increase its collectors, increase tonnage of recyclable waste collected from 2 tons/day to 5 tons/day, as well as increase income generation for collectors and re-investment/growth and sustainability of the initiative. Materials to be collected for pre crushing and bailing include PET, HDPE, LDPE, PP, Paper, Conical Cartons, Cardboard, Paper and Aluminum Cans. Materials can then be transported from the aggregation and bailing sites to recyclers/processing companies in Lusaka for onward processing with no adverse impacts to the environment but rather an alleviation of waste impact on the environment. The equipment to be purchased include a PET crusher to process the PET into flakes, scrubbers/activated carbon filter,

solar power system (was not costed initial proposal), and a 15-ton truck, ensuring that all equipment is energy-efficient.

e. Environmental and Social Management Plan Objectives

The main objective of ESMP was to identify and evaluate risks and impacts associated with the proposed construction and operation of the Manja Pamodzi value enhancement project on the physical, biological, and socio-economic environment and develop mitigation measures. The national environmental legislation, the World Bank Environmental and Social Standards (ESSs) and the technical Environmental and Health and Safety Guidelines (EHSGs) were applied in the preparation of the ESMP.

f. ESMP Methodology and Approach

The methodology and approach applied included review of literature, field assessments to collect baseline data and conduct stakeholder consultations. Field assessments involved collection of water and soil samples for analysis and stakeholders' consultations were based on a door-to-door consultations with selected nearby communities and interviews with relevant government institutions.

g. Legal and Policy Framework

Multiple pieces of legislations relevant to the project activities were reviewed and the key ones to which compliance is required among others were; the Environmental Management Act, No. 12 of 2011 read together with the Environmental (Amendment) Act No. 8 of 2023, the Extended Producer Responsibility SI No 65 of 2018 the Environmental Impact Assessment Regulations, Statutory Instrument No. 28 of 1997, Gender Equity and Equality Act No. 22 of 2015, the Local Government Act No. 2 of 2019, Urban and Regional Planning Act, 2015, the Water Resources Management Act No. 21 of 2011, National Council for Construction Act No. 10 of 2020, Road and Traffic Act No. 11 of 2002, , Public Health Act, Cap 295 and its Subsidiary Legislation, Factories act, workers compensation act, Employment act and Occupational Health Safety Act No. 36 of 2010. In addition, project activities will also conform to the World Bank's ESSs, the EHSGS and Good International Industry Practices (GIIPs).

h. Project Location

The project will be implemented within the premises of Zambian Breweries at the Manja Pamodzi site. Zambian Breweries is located on Plot No. 6438 along Mungwi Road in the heavy industrial area of Lusaka and sits on an area of about 76,091.73 m². Further, Zambian Breweries is located about 2.3 Km from the junction of Mungwi and Lumumba Roads and about 5 Km from the central business district of Lusaka. The site is located on Latitude –15.17 South and Longitude 28.19 degrees) and approximately 5.5 Km northwest of the Lusaka Main Post Office.

i. Project alternatives

There were three (3) alternative sites considered for the project. Two of the alternative sites were in Lusaka and one was in Ndola. Site alternatives considered for location of the Manja Pamodzi value chain enhancement project was based on the following: the presence of a value chain;

collection network; and availability of Land. ZB, to which MPFL is a subsidiary of, has two plants, one in Ndola and another in Lusaka.

j. Environmental and Social Impacts and Mitigation Measures

The impacts in the various phases of the project have been summarized in the table 1 below. The detailed information on the impacts and proposed mitigation measures have been provided in chapter 6 and under the Environmental and Social Management Plan presented in chapter 7.

Table 1: Summary of impacts and mitigation measures

Impact	Mitigation Measure
CONSTRUCTION PHASE	
Reduced Ambient Air Quality	<ul style="list-style-type: none"> • Suppress dust emissions by sprinkling water. Vehicle speed to be limited to 20 km/h. • Provide dust masks to workers. Regular maintenance of vehicles. Use low sulphur fuels. Monitor air quality. • Construction trucks transporting raw materials will be covered. Prohibit open burning of waste on site.
Noise and Vibration	<ul style="list-style-type: none"> • Provide PPE like earmuffs/plugs. • Monitor noise levels. • Limit operation hours to daytime. Regular maintenance of machinery.
Soil Erosion	<ul style="list-style-type: none"> • Preserve and reinstate topsoil. • Limit site clearance to construction footprint. • Install drainages to manage runoff water. • Conduct earthworks during dry season.
Land Degradation	<ul style="list-style-type: none"> • Limit vegetation removal. • Stockpile vegetative material for reclamation. • Replant vegetation post-construction.
Soil Contamination	<ul style="list-style-type: none"> • Conduct maintenance offsite. • Use non-leaking containers for hazardous chemicals. • Train personnel in handling chemicals.
Reduced Worker Safety	<ul style="list-style-type: none"> • Provide PPE like dust masks, gloves, ear plugs. • Erect warning signs and barricades. • Conduct safety inductions and talks. Monitor and report safety incidents.
Land Degradation from Waste Generation	<ul style="list-style-type: none"> • Implement waste management protocols. • Use licensed waste collectors. • Maintain good housekeeping practices.
Visual Intrusion	<ul style="list-style-type: none"> • Avoid parking heavy machinery on site when not in use.
Contamination of Groundwater	<ul style="list-style-type: none"> • Store hazardous materials on impervious floors with bunding. • Regularly inspect storage conditions.
Deterioration of Public Access	<ul style="list-style-type: none"> • Transport equipment on lowbed trucks.

Roads	<ul style="list-style-type: none"> • Limit heavy equipment movement to specific hours.
Reduced Road Safety	<ul style="list-style-type: none"> • Use road signs and set speed limits. • Train drivers on safe road practices. • Sensitize community on road safety.
Strain on Social Facilities	<ul style="list-style-type: none"> • Hire local community members to reduce migrant workers.
Risk of Disease Transmission	<ul style="list-style-type: none"> • Sensitize workers and community on health impacts.
GBV/SEA/SH	<ul style="list-style-type: none"> • Establish accessible Grievance Redress Mechanisms (GRM) and periodically sensitize workers and community member. • Sensitize workers and community on GBV/SEA/SH issues • Introduce code of conduct for workers and signed by project workers.
Influx of workers	<ul style="list-style-type: none"> • Hire local labour.
Unfair employment	<ul style="list-style-type: none"> • Implement the Labor Management Procedures (LMP) to provide fair employment opportunity, establish accessible worker GRM and periodically sensitize workers and ensure minimum age for employment in preventing forced labour and child labour
OPERATIONAL PHASE	
Reduced Ambient Air Quality	<ul style="list-style-type: none"> • Install air filtration systems. • Regular maintenance of machines. • Provide appropriate PPE.
Emission of uPOPs	<ul style="list-style-type: none"> • Ensure optimal processing conditions to reduce heat generated, and installation of air filtration system.
Elevated Noise Levels	<ul style="list-style-type: none"> • Provide earmuffs/plugs. • Monitor and limit noise levels. • Regular maintenance of equipment. • Limit operation hours to daytime.
Power outages and instability	<ul style="list-style-type: none"> • Procure energy efficient equipment and consider solar as an alternative source of energy to ensure reduced downtime.
Soil and Groundwater Contamination	<ul style="list-style-type: none"> • Store chemicals in labelled, non-leaking containers. • Train personnel in handling hazardous materials. • Install secondary containment systems.
Reduced Road Safety and Traffic Congestion	<ul style="list-style-type: none"> • Use road signs. • Set speed limits. • Train drivers on safe practices. • Schedule transportation during off-peak hours.
Solid Waste Generation	<ul style="list-style-type: none"> • Implement waste management plan. • Use designated bins. • Engage licensed waste collectors.

	<ul style="list-style-type: none"> • Promote waste segregation and recycling.
Worker Injuries and Health Risks	<ul style="list-style-type: none"> • Provide PPE like gloves, safety shoes, helmets. • Conduct safety training and drills. • Install emergency facilities. • Proper safety signage
Ergonomic Hazards	<ul style="list-style-type: none"> • Use mechanical aids. • Rotate tasks. • Provide training on lifting techniques. • Design ergonomic workstations.
Fire Hazard	<ul style="list-style-type: none"> • Install fire detection and suppression systems. • Store flammable materials safely. • Conduct fire drills. Maintain emergency exits.
Equipment-Related Injuries	<ul style="list-style-type: none"> • Install safety guards and emergency stop buttons. • Conduct regular maintenance and inspections. • Train workers on safe operation.
Risk of Disease Transmission	<ul style="list-style-type: none"> • Sensitize workers and community on health impacts.
GBV/SEA/SH	<ul style="list-style-type: none"> • Establish accessible worker GRM and periodically sensitize workers. • Sensitize workers on GBV/SEA/SH issues • Introduce code of conduct for workers and signed all workers.
Unfair employment	<ul style="list-style-type: none"> • Implement the Labor Management Procedures (LMP) to provide fair employment opportunity, establish accessible worker GRM and periodically sensitize workers and ensure minimum age for employment in preventing forced labour and child labour
DEMOBILIZATION/DECOMMISSIONING PHASE	
Reduced Ambient Air Quality	<ul style="list-style-type: none"> • Provide dust masks and suppress dust emissions.
Elevated Noise Levels	<ul style="list-style-type: none"> • Provide PPE like earmuffs/plugs. • Monitor and limit noise levels. • Limit operation hours to daytime. • Short duration of activities.
Groundwater and Soil Contamination	<ul style="list-style-type: none"> • Use non-leaking containers for hazardous chemicals. • Store and handle oil and hazardous substances properly. • Train personnel in handling chemicals.
Reduced Road Safety	<ul style="list-style-type: none"> • Use road signs. Set speed limits. Train drivers on safe practices.
Unfair employment	<ul style="list-style-type: none"> • Implementation the Labor Management Procedures (LMP) to provide fair employment opportunity, establish accessible worker GRM and periodically sensitize workers and ensure minimum age for employment in preventing forced labour and child labour

1.0 INTRODUCTION

Manja Pamodzi with support from the World Bank through the Environmental Health and Pollution Management Project (EHPMP) intends to establish an aggregation and processing plant for post-consumer plastic waste which will not only help further reduce the amount of plastic pollution in the environment but also provide economic opportunities.

The project, with support from the World Bank, through the EHPMP project, aims to lessen the harmful effects of climate change by reducing plastic pollution in the environment. It also seeks to improve public health outlook by reducing waterborne diseases caused by improper waste disposal. Most importantly, it will continue to create economic opportunities for collectors and aggregators by providing a source of income.

The setting up and operation of the aggregation, bailing and pre-crushing facilities is likely to have both positive and negative effects on the environment and on people's health hence the need to identify and assess potential adverse social and environmental risks impacts and to develop suitable mitigation measures, as part of an Environmental and Social Management Plan (ESMP) before implementing the project.

1.1 Project Objectives

The project objectives are as highlighted below:

- To expand the sustainable collection and recycling value chain for post-consumer packaging waste in Lusaka
- To increase the number of waste collectors in Lusaka and increase their potential earnings through material value addition.
- To create awareness of the issues and opportunities surrounding waste through educating the local population about the value and management of packaging waste, as well as its health and environmental impacts

1.2 Summary Description of the Project Including Project Rationale

The Manja Pamodzi initiative continues to be community-driven initiative that is aimed at creating collector networks and aggregator sites that enhance the recycling value chain through the collection of post-consumer packaging waste (PCPW) such as Polyethylene Terephthalate (PET), High Density Polyethylene (HDPE), Low Density Polyethylene (LDPE), Polypropylene (PP), Conical Cartons, Cardboard, Paper and Aluminum Cans.

This is achieved by bringing together the community and relevant stakeholders to participate in activities that educate and sensitize, clean up the environment and at the same time create enterprise opportunities. The result of these activities is increased tonnages of recovered PCPW and improved solid waste management practices for a cleaner and safer environment while

providing business opportunities for the vulnerable in peri-urban communities.

For this project, the initiative proposes to set up aggregation, pre-crushing and bailing facility in Lusaka. The aggregation, crushing and bailing facility will be situated at Zambia Breweries Plc Lusaka. This will enable the initiative to increase its collectors, enhance tonnage of recyclable waste collected as well as increase income generation for collectors and re-investment/growth and sustainability of the initiative.

Materials to be collected for pre crushing and bailing include PET, HDPE, LDPE, PP, Paper, Conical Cartons, Cardboard, Paper and Aluminum Cans. Materials can then be transported from the aggregation and bailing site to recyclers/processing companies in Lusaka or Ndola for onward processing with no adverse impacts to the environment but rather an alleviation of waste impact on the environment.

Zambia is among the world's poorest nations with 64% of the population falling below the poverty line. There is a steady trend among the youth towards urbanization with the greatest influx seen in the cities of Lusaka, Kitwe and Ndola.

Population growth of 4.15% per year at these centers puts increasing demand on the already strained civil infrastructure. There is a 57% youth unemployment rate in urban areas, with the majority (80%) of the working- age population relying on the informal sector for income.

Waste management is virtually non-existent in rural areas and even in the major cities an estimated 50% of the generated waste remains un-serviced. Most urban households (64%) bury garbage in pits on their plots and burn any excess. A further 20% of urban households dump their garbage in the street. These open dumpsites attract disease vectors such as mosquitos, flies, and rodents, and allow leachate to seep into the water table. Manja Pamodzi is an innovation that aims at sensitizing on good waste management practices and reducing the amount of waste in the streets through increasing the amount of post-consumer packaging waste (PCPW) collected and recycled in the lower income, industrial and commercial zones. Unskilled urban poor, with a particular focus on woman from this sector are given job opportunities and an avenue to reduce the environmental degradation within their areas.

Manja Pamodzi Foundation Limited has been established as a separate legal entity following the identified need for the continued sustainability of activities initiated to collect post-consumer packaging waste in communities. It has so far proved to be a successful model of collection of post-consumer recyclable waste utilizing education and awareness, development of collector networks and enhancement of collector-recycler linkages and building capacity of recyclers where possible.

The initiative only has twelve (12) aggregators and over fifty (50) collection points and has collected over 24,000 tons of recyclable waste since its inception in 2015. However, there is an urgent need to expand this initiative to more areas, not only in Lusaka city but across all major cities in the country.

Because the initiative is currently dependent on ZB funding, this poses as a limitation to its sustainability, it therefore seeks grants and more funders for the expansion of its activities as

a large-scale aggregator. The setup of MPFL managed aggregation site and value addition plant will enable the entity to generate income for further expansion and greater impact for its beneficiaries.

Not addressing this limitation will leave this initiative at a very small scale, negatively impacting collection of postconsumer packaging waste and the opportunities for job creation and improved livelihoods.

1.3 The Developers Physical Address and the Contact Person

Developer

Manja Pamodzi Foundation Limited
Plot 6438 Mungwi Road,
P.O Box 31293 LUSAKA

Contact Person

Ms. Bridget Bwembya Banda
Corporate Affairs & Sustainability Manager
Zambian Breweries Plc
Cell phone: 0960943843
Email: Bridget.BwembyaBanda@zm.ab-inbev.com

1.4 Particulars of MPFL Board Members

Table 2 Particulars of Board Members

Name	Designation	Contact number	Email address
Thais Cavinatto	Chairperson	0765025525	Thais.Cavinatto@bees.com
Tawanda Hojane	Board Director	0961066743	Tawanda.hojane@zm.ab-inbev.com
Deborah Bwalya	Board Director	0967784122	Deborah.bwalya@zm.ab-inbev.com
Bridget B. Banda	Board Secretary	0960943843	Bridget.bwembyabanda@zm.ab-inbev.com

1.5 Track Record

Manja Pamodzi is a post-consumer waste incentivization initiative aimed at creating a clean environment whilst improving livelihoods for communities; Implemented in response to Extended Producer Responsibility Legislation. The initiative began implementation in February 2015 and was officially launched in August 2015. The first phase of Manja Pamodzi was co-funded by Zambian Breweries & Millennium Challenge Account Zambia and is Supported by Zambia Environmental Management Agency (ZEMA) and Lusaka City Council (LCC). In August 2018, Manja Pamodzi was transitioned from a project to a separate legal entity, Manja Pamodzi Foundation Limited (MPFL), a Company Limited by Guarantee.

MPFL has successfully developed a model that is supporting local authorities and government efforts in waste management through changing mindset, cleaning the environment & creating

opportunities for self-employment & livelihood improvement. The foundation has also developed a sustainable recyclable waste value chain. It has also created a platform for data collection and dissemination of quantities of recyclable waste in the community and landfill for various stakeholders. From inception, MPFL has been launched in 14 townships in Lusaka through district clean-up events. The foundation also has 11 supported aggregator sites with a collector network of 1000 collectors (more than 80% being female). As of February 2024, cumulative total recyclable materials collected stood at 22, 473.11 tons.

1.6 Brief Description of the Location

The project will be implemented within the premises of Zambian Breweries at the Manja Pamodzi site (Latitude –15.17 South and Longitude 28.19 degrees). The site is located approximately 5.5km northwest of the Lusaka Main Post Office.

1.7 Total Project Cost/Investment

The cost of the Manja Pamodzi – Recycling Value Chain Enhancement Project in Lusaka is USD 393,368.00.

1.8 Proposed Project Implementation Date

Manja Pamodzi plans to commence implementation of the project soon after approval of the Environmental and Social Management Plan (ESMP). The proposed date is mid 2024 provided the project is approved by ZEMA.

2.0 LEGAL AND POLICY FRAMEWORK

This section presents social and environmental laws and regulations relevant to the proposed project. The following institutional and regulatory framework will govern the implementation of the proposed project at all project phases.

2.1 Policy, Legal and Institutional Framework

2.1.1 Policy Framework

2.1.1.1 National Policy on the Environment, 2007

The National Policy on the Environment (2007) addresses Zambia's critical environmental issues, including deforestation, land degradation, and pollution, largely driven by poverty and inadequate policies. It advocates for sustainable natural resource management, emphasizing community involvement, legal frameworks, and public awareness. The policy aligns with the UN Millennium Development Goals, focusing on poverty eradication and environmental sustainability. Manja Pamodzi's recycling and value chain enhancement project will directly support the policy's goals. By promoting waste recycling and reducing environmental degradation, the project helps mitigate the over-exploitation of resources and land degradation. It also aligns with the policy's emphasis on community participation and awareness, as the project involves local collectors and educational initiatives. Moreover, the recycling initiative contributes to sustainable economic growth by creating jobs and promoting the efficient use of resources, thus supporting the policy's objectives of improving livelihoods and environmental management. Through these efforts, Manja Pamodzi aids in building a more sustainable and resilient environment in Zambia.

2.1.1.2 Vision 2030

The Vision 2030 is a government policy document that reflects the country's collective understanding, aspirations, and determination of the Zambian people to be a prosperous middle-income nation by 2030. The Vision provides that Zambia will aspire to achieve "universal access to clean, reliable and affordable energy at the lowest total economic, financial, social and environmental cost consistent with national developmental goals by 2030".

To ensure that the Vision is achieved, the GRZ developed the National Performance Framework (NPF). To attain the vision 2030, one of the NPF strategic objectives is to enforce environmentally and socially sustainable development principles.

Vision 2030 is operationalized in sequential 5-year National Development Plans. Currently, the Seventh National Development Plan (7NDP) is in force.

2.1.1.3 Eighth National Development Plan

The 7NDP is the country's blueprint for development for the period 2021 to 2025. The Plan is a building block formulated to meet the country's goals as contained in the Vision 2030. It recognizes the need to enforce environmentally and socially sustainable development principles and envisions a Zambia that exists in a sustainable environment. In this regard, the Plan has envisaged that by 2030, Zambia will have improved its laws, regulations and the capacity of institutions to promote sustainable use of environmental resources and adoption of environmentally friendly practices.

The Manja Pamodzi Recycling Value Chain Enhancement project is key to ensuring sustainable environmental management as outlined in development outcome 1 under strategic development area number three of the ENDP. This will be done through strategy number 2 – promoting integrated environmental management.

2.1.1.4 The National Health Policy, 2012

The National Health Policy of 2012 sets clear directions for the development of the Health Sector in Zambia. The policy recognizes that occupational mortality, morbidity and disability are a major problem in Zambia. The policy's objective is to achieve increased coverage of occupational health and safety services in all sectors to contribute to reducing occupational health and safety hazards at work. The policy's focus on reducing health risks from environmental hazards aligns with the project's goals of promoting sustainable waste management and recycling. By addressing waste collection and reducing pollution, the project contributes to better public health outcomes, particularly in underserved communities, supporting the policy's objective of creating healthier living conditions across Zambia.

2.1.1.5 National Employment and Labor Market Policy, 2014

The main objective of the National Employment and Labor Market Policy of 2014 is to create adequate and quality jobs under conditions that ensure adequate income, protection of workers' and basic human rights. This policy also stipulates the existing legal framework and examines its adequacy and relevance in facilitating the effective and efficient operations of the Labor Market within the existing macroeconomic framework. During the construction and operation of the Manja Pamodzi recycling and value chain enhancement project, there will be a need to protect the human rights of employees and as such, the policy will be relevant.

2.1.1.6 The National Youth Policy, 2015

The National Youth Policy was adopted in 2015 with the aim of providing an enabling environment that promotes the rights and obligations of the Youth and fosters their participation in national development. The policy defines a "youth" as a person aged between 15 and 35 years old. The policy also embraces provisions stipulated in various pieces of legislation and policies that regulate labor laws as a means of creating youth opportunities to legitimate work and self-employment opportunities. The construction and operation of the proposed Manja Pamodzi recycling and value chain enhancement project must be done in such a way that youths will be empowered and not discriminated against.

2.1.2 Review of Relevant National Regulatory Framework

The proposed project activities touch on many regulatory instruments which need compliance with. Presented in the table 3 below is a listing of key legislation relevant to the project and requiring legal compliance were applicable.

Table 3: Relevant Legislation, Interpretation, and compliance

	INTERPRETATION OF LEGISLATION	RELEVANCE TO THE PROJECT AND COMPLIANCE
Environmental Management Act, No. 12 of 2011 read together with the Environmental Management (Amendment) Act No.8 of 2023	The Act aims to ensure integrated environmental management, protection, and sustainable use of natural resources. It establishes ZEMA to oversee environmental protection and pollution control. The Act mandates that anyone planning an activity that may harm the environment must obtain ZEMA's approval. Additionally, ZEMA can delegate its functions to appropriate authorities to safeguard public health, welfare, and the environment.	The proposed value addition plant for post-consumer plastic waste by MPFL at the ZB Lusaka plant is an activity that may adversely affect the environment, and as such, there is need for MPFL to conduct an ESIA. Once the EIA has been prepared, it will be submitted to ZEMA for consideration and MPFL will only commence the project when ZEMA issues MPFL with a Decision Letter approving the project.
Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, Statutory Instrument No. 28 of 1997	The Regulations, under Regulation 3 state that “a developer shall not implement a project for which a project brief or an environmental impact statement is required under the Regulations, unless a Project Brief or an Environmental Impact Assessment has been concluded in accordance with the Regulations and the Council has issued a decision letter”.	
Environmental Management (Licensing) Regulations, Statutory Instrument No. 112 of 2013	The Regulations provide for licensing of activities relating to air and water pollution; waste management; pesticides and toxic substances; hazardous waste and ozone depleting substances. In particular, Regulation 5 of the Regulations, read together with the	The Regulations are relevant to the operations of the Manja Pamodzi recycling plant as they provide for means in which waste management activities must be conducted.

	<p>Second Schedule prescribe limits on emissions for ambient air pollutants, Further part IV of the Regulations prescribes. management of hazardous waste.</p>	
<p>Extended Producer Responsibility SI No, 65 of 2018</p>	<p>The Statutory Instrument (SI) No. 65 of 2018, issued under the Environmental Management Act, mandates that producers are responsible for managing the lifecycle of their products, including the post-consumer stage. It covers various waste types, such as plastics, non-returnable containers, and electronic waste, requiring producers to implement measures for waste minimization, treatment, and recycling. This regulation ensures that producers take an active role in reducing environmental pollution by managing waste associated with their products.</p>	<p>SI No. 65 of 2018 is crucial to the Manja Pamodzi project as it provides a regulatory framework that supports recycling and waste management. It encourages producers to collaborate with initiatives like ours, aligning with our mission to reduce environmental impact through extended producer responsibility. This regulation strengthens our recycling network and promotes responsible waste handling among stakeholders.</p>
<p>Solid Waste Management Act</p>	<p>The Solid Waste Management Act in Zambia establishes a comprehensive legal framework for managing solid waste, emphasizing environmental and public health standards. It mandates that only licensed entities, excluding local authorities, can provide waste management services. The Act also assigns specific responsibilities to waste generators,</p>	<p>For the project, the Act's provisions are crucial in guiding the legal and operational framework of our waste management activities. Compliance with licensing and permitting requirements will ensure that our services are legally recognized and meet national standards. The responsibilities placed on waste generators align with our goals to educate and engage communities in proper waste segregation,</p>

	<p>such as maintaining cleanliness and segregating waste into designated categories. Additionally, it encourages community participation in maintaining public cleanliness and outlines strict standards for waste collection, transportation, and disposal. Enforcement mechanisms, including penalties for non-compliance, ensure adherence to these regulations.</p>	<p>enhancing the efficiency of recycling efforts. The emphasis on community participation supports our initiatives to foster local involvement in maintaining clean environments. Adhering to the prescribed standards for waste handling and disposal not only ensures regulatory compliance but also promotes safe and sustainable waste management practices.</p>
<p>Gender Equity and Equality Act No. 22 of 2015</p>	<p>The aim of the Act is to promote gender equality in all spheres of life. The Act seeks to achieve its aim through the establishment of the Gender Equity and Equality Commission as well as the promotion of the implementation of measures strategies that ensure gender equity, equality and integration of both sexes in society. The Act, under Part IV further provides for the elimination of all forms of discrimination against women and achieve gender equity and equality by giving effect to the Convention on the Elimination of all Forms of Discrimination against Women</p>	<p>Undertaking the ESIA relating to the Manja Pamodzi Recycling Value Chain Enhancement Project will involve both men and women and as such, all participants will be treated equally. Further, upon implementation of the project, there will be need to make deliberate steps to ensure gender equity, equality, and integration of both sexes throughout the project life cycle.</p>

<p>Workers Compensation Act</p>	<p>The Workers' Compensation Act ensures workers receive compensation for injuries or diseases related to their employment. It covers accidents occurring after the Act's commencement and includes provisions for cases before the Act if covered by insurers. Employers' civil liabilities remain intact, but any damages awarded are reduced by compensation paid under the Act. Workers can claim compensation from third parties responsible for their injuries, with provisions for employers or commissioners to recover costs.</p>	<p>The Workers' Compensation Act is vital for the Manja Pamodzi project, providing protection and compensation for workers in case of workplace injuries or diseases. The project involves potentially risky activities like sorting and processing materials, making compliance with the Act essential. This compliance ensures workers' safety, legal adherence, and a responsible business approach, which is crucial for maintaining the project's sustainability and reputation.</p>
<p>Human Rights Commission Act, Cap. 48</p>	<p>This Act seeks to promote the human rights of individuals and it establishes the Human Rights Commission as the body responsible for eradication of human rights abuse. Section 9 of the Act provides for the function of the Human Rights Commission to investigate human rights violations; investigate any maladministration of justice; and propose effective measures to prevent human rights abuse.</p>	<p>As the recycling plant is intended to serve the interests of Zambians today as well as future generations, its operation will be based on non-discrimination on any grounds. Hence, people of different genders, ethnic groupings, religious or political affiliations will be equally served by the processing plant. Further employees of the MPFL will also not be discriminated against.</p>
<p>Persons with Disabilities Act No. 6 of 2017</p>	<p>The Act provides for the protection of the interests of persons with disabilities in various spheres of life, including the workplace. Section 2 of the Act defines a disability as “a permanent physical, mental, intellectual, or sensory impairment that alone, or in a combination with</p>	<p>In order to ensure that employees, clients or any other individuals who are physically disabled are not hindered from accessing the recycling plant, measures will have to be placed to make all parts of the plant to be easily accessible by such individuals.</p>

	social or environmental barriers, hinders the ability of a person to participate in fully or effectively society on equal basis with others”.	
The Local Government Act No. 2 of 2019	The Act provides for the establishment of Councils or Districts, the functions of local authorities and the local government system. Some of these functions of local authorities, as set out in the First Schedule to the Act, relate to pollution control and the protection of the environment in general.	Manja Pamodzi Recycling Value Chain Enhancement Project will fall within the jurisdiction of the Lusaka City Council and Ndola/Kitwe City Council. MPFL will be required to obtain all the required permits from the local authority.
Urban and Regional Planning Act, 2015	The Act provides for the development, planning and administration principles, standards and requirements for urban and regional planning processes and systems as well as a framework for administering and managing urban and regional planning for the Republic. Under section 15, the Act provides for planning committees, whose power is to- <ul style="list-style-type: none"> (i) recommend for adoption the integrated development plans, local area plans and any other plan prepared by the local planning authority in accordance with the Act. 	The Act is relevant in that construction activities such as infrastructure development will require planning permission from the planning authorities in each respective area. MPFL will ensure that all relevant permission is obtained before embarking on any project that requires development planning authorization.

	<ul style="list-style-type: none"> (ii) recommend modifications or changes to the integrated development plan, local area plan and any other plan prepared by the local planning authority in accordance with the Act. (iii) consider and make planning decisions on applications for development as prescribed. (iv) monitor the implementation and enforcement of the integrated development plans, local area plans and any other plan prepared by the local planning authority in accordance with the Act. 	
<p>Water Resources Management Act No. 21 of 2011</p>	<p>The Act provides for the control, ownership and use of water and establishes the Water Resources Management Authority (WARMA) and regulates the use of public water including protection against pollution. Section 8 of the Act provides for the function of WARMA to promote and adopt a dynamic, gender-sensitive, integrated, interactive, participatory and multisectoral approach to water resources management and development that includes human, land, environmental and socioeconomic considerations, especially poverty</p>	<p>The proposed project will be implemented on ZB's premises. As MPFL is likely to drill a borehole on the site of the, there will be need for MPFL to obtain a permit from WARMA.</p>

	reduction and the elimination of water borne diseases, including malaria.	
National Council for Construction Act No. 10 of 2020	This Act, under Part III provides for the promotion and development of the construction industry in Zambia through the registration of the contractors to provide for the affiliation to the council of professional bodies or organization whose members are engaged in activities related to the construction industry; to provide for the regulation of the construction industry; to provide for the establishment for the construction school; and to provide for the training of persons engaged in construction or in activities related to the construction.	The Manja Pamodzi Recycling Value Chain Enhancement Project will involve engaging a contractor and/or subcontractors. During the implementation of the project MPFL will only engage registered contractors/subcontractors who adhere to the provisions of the Act and its subsidiary legislation.
Road and Traffic Act No. 11 of 2002	The aim of the Act is to promote road safety for all road users. Section 4 of the Act establishes and defines the functions of the Road Transport and Safety Agency (RTSA) which include	Relevance: The proposed is located on Mungwi and will involve traffic movement to and from the site during operations. MPFL will engage RTSA to ensure the smooth flow of traffic to ensure the safety of people on

	implementation of policy on road transport, traffic management and road safety.	sites as well as transporters of material that will be used during the project implementation.
Public Health Act, Cap 295 and its Subsidiary Legislation	This Act regulates public health, including the prevention and control of infectious diseases. It mandates actions such as inspecting infected premises and examining individuals suspected of carrying infectious diseases. Section 67 prohibits harmful discharges, like noxious matter or wastewater, into public streets, watercourses, or unauthorized areas. Additionally, Section 71 places a responsibility on local authorities to implement measures to prevent water pollution. The Act also facilitated the introduction of the Public Health (Infected Areas) (Coronavirus Disease 2019) Regulations in 2020, aimed at curbing the spread of COVID-19.	The legislative framework under the Public Health Act is vital to the operations of the Manja Pamodzi recycling and value chain enhancement project as adherence to the laws will enable the employees of to be free from disease as well as the communities in which they live.
Occupational Health Safety Act No. 36 of 2010	The Act outlines the responsibilities of manufacturers, importers, and suppliers to ensure that their products used at work do not pose health or safety risks. It requires employers to safeguard the health, safety, and welfare of employees by providing a safe work environment. Section 16(2)(f) specifies that employers must maintain a working environment that is reasonably safe and free from health risks	The Act is relevant as it will enable MPFL to operate the recycling plants in a manner that will protect the employees as well as the Clients who access the site.

	and provide adequate facilities and arrangements for employee welfare.	
Factories Act, Cap 441	The Factories Act ensures the safety and inspection of plant and machinery in workplaces. It defines a factory as premises where manual labor is performed. Section 33 requires that factories with hazardous machinery or equipment must secure these areas and display appropriate warning signs.	During implementation of the Manja Pamodzi Recycling Value Chain Enhancement Project, various equipment will be used and as such, there will be need to adhere to the provisions of the Act so as to attain safety.
Workers Compensation Act, No. 10 of 1999	It provides inter alia for compensation of workers for disabilities suffered or diseases contracted during the course of employment. Section 6 of the Act provides for the civil liability of the employer for injury or harm occasioned to an employee	All workers of MPFL who fall within the categories of those to be compensated under the Act will be accordingly compensated.
Environmental Impact Assessment Regulations SI No. 28 of 1997	The Environmental Impact Assessment Regulations of 1997 are designed to assess the potential environmental impacts of proposed projects or activities in Zambia. These regulations likely outline the procedures, criteria, and requirements that developers or proponents must follow when conducting an environmental impact assessment (EIA) for their projects. The goal is to ensure that development projects are carried out in a	Compliance to the Environmental Impact Assessment Regulations of 1997 is essential for Manja Pamodzi's recycling value chain enhancement project to ensure that potential environmental impacts are identified, assessed, and mitigated effectively as highlighted in part 3 (2), (a) of the SI. This will help promote sustainability and minimizing harm to the environment and local communities.

	sustainable manner, minimizing harm to the environment and local communities.	
Solid Waste Management and Regulations Act of 2018	The Solid Waste Management and Regulations Act of 2018 serves as a comprehensive legal framework aimed at governing the management and disposal of solid waste in Zambia. This legislation encompasses a range of provisions designed to address the various aspects of solid waste management, from collection, sorting, transportation, treatment, and disposal (Part III) to licenses and permits (Part IV).	To ensure compliance with the Solid Waste Management and Regulations Act of 2018, will implement measures to address the requirements of the act, including obtaining necessary permits and approvals, conducting an EIA, implementing waste sorting and segregation procedures, ensuring proper waste transportation and disposal, implementing pollution prevention measures, and engaging with local communities to promote sustainable waste management practices.
Anti-Gender-Based Violence Act, 2010	The Anti-Gender-Based Violence Act of 2010 in Zambia is aimed at addressing the issue of gender-based violence (GBV) in Zambia. The act provides for the protection of victims of gender-based violence and provides for matters connected with, or incidental to, the foregoing.	The Anti-Gender-Based Violence Act of 2010 is relevant to the Manja Pamodzi Recycling project as it emphasizes protecting victims and preventing violence against women and girls. While not directly related to our project's focus, it is important for us to comply with this legislation to ensure a safe and inclusive work environment for everyone involved.
Employment Code Act No. 3 of 2019	The Employment Code Act No. 3 of 2019 serves as a comprehensive framework for regulating employment relationships in Zambia, with provisions aimed at ensuring fair treatment of workers, promoting workplace safety and health, and facilitating the	Manja Pamodzi will uphold the rights and well-being of individuals engaged in the recycling value chain enhancement project activities.

	resolution of disputes between employers and employees.	
National Gender Policy (NGP), 2014	The National Gender Policy of 2014 serves as a comprehensive framework for advancing gender equality and women's empowerment in Zambia, with provisions for policy objectives, gender mainstreaming, legal and institutional reforms, addressing gender-based violence, promoting women's participation in decision-making, capacity-building, and monitoring and evaluation.	The relevance of the National Gender Policy (NGP) of 2014 to the Recycling Value Chain Enhancement project lies in its overarching objectives to promote gender equality and women's empowerment in Zambia. Compliance with this policy is crucial for Manja Pamodzi to ensure that the project contributes to advancing these objectives and promotes inclusivity and equality.
Employment of Children and Young Persons Act, 1994	The act is intended to provide a legal framework that balances the need to protect the rights and well-being of children and young persons with the realities of economic activity, ensuring that they are not exploited or exposed to harmful conditions while also recognizing their right to education, development, and a safe and nurturing environment.	By adhering to the provisions of the Employment of Children and Young Persons Act of 1994, Recycling value chain enhancement project will promote the rights, safety, and well-being of children and young persons, while also contributing to their education, development, and future opportunities.

2.1.2 Institutional Framework

The following institutional framework will govern the operations of the Manja Pamodzi Foundation Limited's recycling and value chain enhancement project.

2.1.2.1 Ministry of Green Economy and the Environment

The Ministry of Green Economy and the Environment is responsible for the overall framework for environmental policy. In particular, the Ministry is responsible for formulation of environmental, policy, strategy development, pollution control and natural resource conservation and management.

2.1.2.2 The Zambia Environmental Management Agency (ZEMA)

The Zambia Environmental Management Agency is a statutory body established under the Environmental Management Act (EMA), No. 12 of 2011. The following are the main functions of ZEMA:

- Integrated environmental management and protection and conservation of the environment and sustainable management and use of natural resources.
- Prevention and control of environmental pollution and environmental degradation.
- Providing for public participation in environmental decision making and access to environmental information.
- Undertaking environmental auditing and monitoring.
- Facilitating implementation of international environmental agreements and conventions to which Zambia is party.

In terms of institutional hierarchy, ZEMA falls under and is accountable to the Ministry of Green Economy and the Environment. Thus, this ESMP has been prepared for submission to ZEMA for consideration of the proposed project.

2.1.2.3 Ministry of Local Government and Rural Development

The Ministry of Local Government and Rural Development is responsible for local government policy on infrastructure development and human settlement. There are departments under the portfolio of the Ministry, which provide a strategic and supervisory role to local authorities. Although local authorities are established as corporate bodies, the Ministry of Local Government and Rural Development plays an oversight role and provides a critical interface between the local authorities, Parliament and Central Government.

2.1.2.4 Lusaka City Council (LCC)

The Lusaka City Council (LCC) was established under the Local Government Act No. 22 of 1991, which stipulates the functions, works, proceedings, powers and functions of all local authorities in Zambia. Like all other local councils, the Lusaka City Council falls under the Ministry of Local Government and Rural Development. Among the functions prescribed for local councils are policy formulation, forward planning, public health, water supply and sanitation, waste management, which includes waste collection and disposal site management for the area under their responsibility. Other functions are enforcement of by-laws, monitoring and inspectorate duties. Councils carry out their mandate through by-laws, which they are powered to make under the Local Government Act. The Manja Pamodzi

processing plant falls within the jurisdiction of the Lusaka City Council and is subject to its by-laws. The company is required to obtain licenses, permits and approvals relevant to the Brewery activities from the LCC during operations.

2.1.3 International and Regional Conventions

Zambia is a party to many international and regional conventions aimed at addressing environmental concerns. Those relevant to the construction and operation of the Manja Pamodzi recycling and value chain enhancement project and its environmental setting will require compliance with and include but not limited to:

- United Nations Framework Convention on Climate Change.
- United Nations Sustainable Development Goals.
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal,
- Stockholm Convention on Persistent Organic pollutants.

United Nations Framework Convention on Climate Change

In accordance with the UNFCCC, the Manja Pamodzi initiative should prioritize measures that contribute to mitigating climate change and reducing greenhouse gas emissions associated with waste management activities.

United Nations Sustainable Development Goals

Zambia has endorsed the SDGs, including SDG 12 on Responsible Consumption and Production, which emphasizes sustainable waste management, recycling, and resource efficiency. Aligning national policies and strategies with the SDGs helps Zambia achieve its development objectives while addressing environmental challenges, including waste management.

The Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal

To remain compliant with the Basel Convention, the Manja Pamodzi initiative will prioritize the environmentally sound management of hazardous wastes, including those generated during the recycling process.

Stockholm Convention on Persistent Organic Pollutants

Adherence to the Stockholm Convention is essential for mitigating the release of persistent organic pollutants (POPs) into the environment during recycling activities. While POPs are not typically associated with the materials collected by the Manja Pamodzi initiative, the recycling process itself will still avoid inadvertently generating or dispersing POPs.

2.1.4 World Bank Environmental and Social Framework (ESF)

The project will also conform to the World Bank Environmental and Social Standards as contained in the ESF in addition to the national legislation. Five (5) out of the ten (10

standards, their relevance and how compliance of the project will be attained are presented in Table 4. MPFL is obliged to comply with all relevant World Bank Environmental and Social Standards as required by the Environmental and Social Framework.

The Manja Pamodzi recycling value chain enhancement project triggers the following WB Environmental and Social Standards:

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS 2: Labor and Working Conditions
- ESS 3: Resource Efficiency and Pollution Prevention
- ESS 4: Community Health and Safety and
- ESS 10: Stakeholders Engagement and Information Disclosure

Table 4: Relevant World Bank Environmental and Social Standards

World Bank Environmental & Social Standards	Explanation of the ESS	Relevance to the Project and Compliance
<p>ESS1: Assessment and Management of Environmental and Social Risks and Impacts</p>	<p>ESS1 aims to ensure that World Bank-funded projects are implemented in a manner that minimizes harm to the environment and affected communities, while maximizing sustainable development outcomes. It sets a framework for proactive risk management and stakeholder engagement throughout the project lifecycle.</p>	<p>ESS 1 is relevant to The Manja Pamodzi recycling value chain enhancement project due to its potential environmental and social risks and impacts, particularly in terms of waste management. The project aims to set up aggregation, pre-crushing, and bailing facilities in high-density or high waste generation areas. These activities could have environmental implications such as air and water pollution, soil contamination, and habitat disturbance. Hence, the preparation of this ESMP with mitigation measures to reduce E&S risks and impacts associated with project activities.</p>
<p>ESS2: Labor and Working Conditions</p>	<p>ESS2 aims to promote fair and safe working conditions in projects funded by the World Bank, protecting the rights and well-being of workers and contributing to sustainable development. It sets standards for labour practices and provides workers with accessible means to raise workplace concerns. The worker GRM is in proportionate to the nature and scale and potential risks of the project.</p>	<p>ESS2 is relevant to the project because it involves the creation of job opportunities for vulnerable populations, particularly focusing on unemployed youth and women from lower-income communities and preventing forced labour and child labour. The project will ensure that the occupational health and safety of workers is not compromised by being compliant to the requirements of ESS2 including the preparation of OHS plan. The plan will include procedures on incident investigation and reporting, recording, and reporting of incidents, emergency preparedness and response procedures and continuous training and awareness to workers.</p>

<p>ESS3: Resource Efficiency and Pollution Prevention and Management</p>	<p>ESS3 aims to promote sustainable resource management and pollution prevention in World Bank-funded projects. By integrating resource-efficient practices and pollution control measures, projects can minimize their environmental footprint, protect human health, and contribute to sustainable development goals.</p>	<p>ESS3 is relevant to the project as it involves waste management and recycling activities. ESS3 aims to promote resource efficiency and pollution prevention in projects. The project's activities, such as collecting, sorting, and processing post-consumer plastic waste, have the potential to generate pollution and environmental impacts if not managed properly. The project site will be designed to demonstrate technologies to reduce emissions of uPOPs in waste management. The design and equipment to be used to take into account minimization of waste generation, where the reuse, recycle and recover of waste needs to be conducted in a manner that is safe for human health and the environment.</p>
<p>ESS4: Community Health and Safety</p>	<p>ESS4 aims to promote community health, safety, and security in World Bank-funded projects. By addressing potential risks and implementing appropriate measures, projects can minimize harm to communities and contribute to sustainable development outcomes.</p>	<p>ESS4 is relevant to the proposed project due to its focus on community health, safety, and security. The Manja Pamodzi recycling value chain enhancement project aims to improve solid waste management practices and create cleaner and safer environments in peri-urban communities. ESS4 requires the project to assess and mitigate potential risks to community health and safety associated with project activities.</p>
<p>ESS10: Stakeholders Engagement and Information Disclosure</p>	<p>ESS10 aims to ensure that projects funded by the World Bank are responsive to the needs and concerns of affected stakeholders, promote transparency and accountability in project decision-making, and empower communities to participate in shaping their own development outcomes. By fostering meaningful engagement and information disclosure, projects can build trust, legitimacy, and social acceptance, leading</p>	<p>ESS10 is relevant by the Manja Pamodzi recycling value chain enhancement project because it involves stakeholder engagement and information disclosure. The project aims to bring together communities and relevant stakeholders to participate in waste management activities. ESS10 requires the project to engage with all stakeholders throughout the project cycle, provide them with timely and relevant information about project activities and impacts, and ensure their meaningful participation in decision-making processes.</p>

	to more sustainable and inclusive development outcomes.	
--	---	--

Environmental Health and Safety Guidelines and Good International Industry Practices

The Environmental, Health, and Safety (EHS) Guidelines are comprehensive technical reference documents that provide general and industry-specific examples of Good International Industry Practice (GIIP). These guidelines are designed to help prevent waste generation, promote reuse and recycling, and ensure good housekeeping practices. They emphasize the importance of establishing waste management priorities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts, and considering waste generation and its consequences.

Section 1.6 of the EHS Guidelines on Waste Management specifically requires the segregation of waste and the establishment of a waste management hierarchy. This hierarchy prioritizes prevention, reduction, reuse, recovery, recycling, removal, and finally, disposal of wastes. The guidelines are intended to be applied throughout the project life cycle to ensure that EHS risks are managed effectively. These guidelines are used in conjunction with industry-specific guidelines to address the unique EHS challenges of different sectors,

Project Environmental and Social Risk Classification

The proposed project is classified as a Moderate risk project and hence the preparation of this ESMP. The moderate risk rating is based on the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant with risks and impacts that are site specific and reversible. This is because the Project is not complex and/or large, does not involve activities that have a high potential for harming people or the environment, and is located away from environmentally or socially sensitive areas. As such, the potential risks and impacts and issues are likely to have the following characteristics:

- Predictable and expected to be temporary and/or reversible.
- low in magnitude.
- site-specific, without likelihood of impacts beyond the actual footprint of the Project; and
- low probability of serious adverse effects to human health and/or the environment (e.g., do not involve use or disposal of toxic materials, routine safety precautions are expected to be sufficient to prevent accidents, etc.).
- The Project's risks and impacts can be easily mitigated in a predictable manner.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location



Figure 1: Aerial view of the proposed project site.

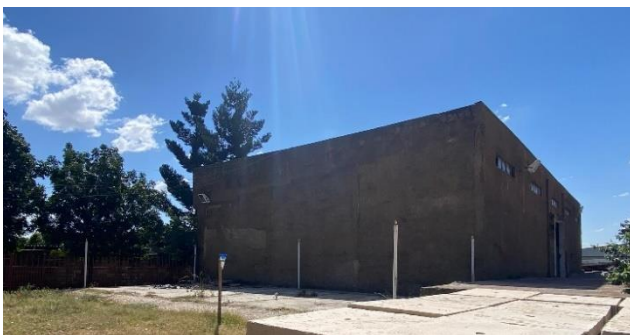


Figure 2: Actual images of the Manja Pamodzi recycling value chain and enhancement project.

Zambian Breweries is located on plot No. 6438 along Mungwi Road in the heavy industrial area Lusaka City of Lusaka Province and sits on an area of about 76,091.73 m². Further, Zambian Breweries is located about 2.3km from the junction of Mungwi and Lumumba Roads and about 5km from the central business district of Lusaka. Provided below are corner geographic coordinates of Zambian Breweries' premises where the proposed project will be undertaken.

Table 5: reference coordinates for the proposed project site

Reference	Latitude (S)	Longitude (E)
Corner 1	15°23'31.50"	28°14'52.00"
Corner 2	15°23'32.00"	28°14'51.00"
Corner 3	15°23'31.00"	28°14'50.00"
Corner 4	15°23'30.00"	28°14'51.00"

Further, the proposed project site lies about 1,274 m above mean sea level and slopes towards the north. Surrounding Zambian Breweries are the following facilities and developments:

- North of the plant is Nyiombo Investments, a company dealing in commodity trading.
- Northwest of the Plant is Sprayrite Zambia limited, a company dealing in panel beating works.
- West of the plant is Backloads Zambia, a company dealing in freight and logistics.
- South of Zambian Breweries is Tombwe Processing, a company dealing in tobacco processing.
- Other companies within a 300m radius of Zambian Breweries include Zamleather, a subsidiary of Zambeef Plc, Panorama Security, ZAMIM Campus, Shorthorn Printers. George Compound is located beyond Zamleather.

3.2 Nature of the Project

The Manja Pamodzi recycling and value chain enhancement project aims to create a modern processing facility to manage and process post-consumer waste materials. The project will involve the demolition of an existing building on the site to make way for the construction of a new facility designed from scratch. This new processing site will include a sorting area, bailing and crushing area, training room, as well as toilets and showers to support the project's operations and personnel. The facility will process materials sourced from a network of over 1,000 collectors and aggregators, facilitated by the Manja Pamodzi Trucks. Upon arrival at the site, materials such as PET, HDPE, PP, aluminum cans, paper, LDPE, and

cardboard will be sorted. The project will utilize a dry crushing/flaking process, specifically for PET, to minimize wastewater generation. The facility will also handle the baling of cardboard and cans to reduce volume, while HDPE, LDPE, and PP materials will be sold in their raw form due to their high market value. The final products, after processing, will be packed in 50 kg bags, sealed, and transported to processing plants offering the best price.

3.3 Main activities

This section describes the main project activities included in the Preparation, Construction and Operation Phases.

3.3.1 Preparation Phase

- Preparation of detailed engineering designs
- Preparation of ESMP
- Obtain a decision letter from the Zambia Environmental Management Agency (ZEMA), and secure license to transport and treat solid waste from the Lusaka Integrated Solid Waste Management company (LISWMC)
- Stripping of topsoil
- Demarcation of site in readiness for excavations
- Transportation of construction materials to site and onsite storage of materials in designated areas such as but not limited to building blocks, sand, gravel, and stones.

3.3.2 Construction phase

- sub-structural works: excavations of trenches for the foundation, spreading and compaction of gravel and aggregate mixing, pouring and compaction of concrete, construction of the ground floor structures.
- super-structural works; mixing, pouring and compaction of concrete, preparation of the mortar, construction of the upper floor and buildings on the upper floor.
- installation of the electrical power system and associated electrical units, water and sewage management units, mechanical equipment; and
- construction of walkways and driveways, parking areas and drainage network

3.3.3 Operation phase and maintenance phase

This section outlines the main activities that will be carried out by the Manja Pamodzi value chain enhancement project in Lusaka.

Phase I: Aggregation and Processing Site Set-up

- Procurement of truck and plastic crushers
- Get approval letter from ZEMA, and secure licenses for transportation and treatment of solid waste from LISWM.
- Lusaka community engagements
- Lusaka collection Network Development

Phase II: Operation

- Installation of crushers
- Commissioning and operationalization of site
- Collection of 50 tons of recyclable post-consumer waste per month

Phase III: Waste Management Education and awareness

- Pre DCP training
- DCP Lusaka
- Post districts clean up (DCP) engagement Lusaka
- Schools' awareness
- Communication campaign

3.3.4 Staffing During the Operation Phase

The structure of the Manja Pamodzi value chain enhancement program will take the shape of the MPFL organizational structure as highlighted below:

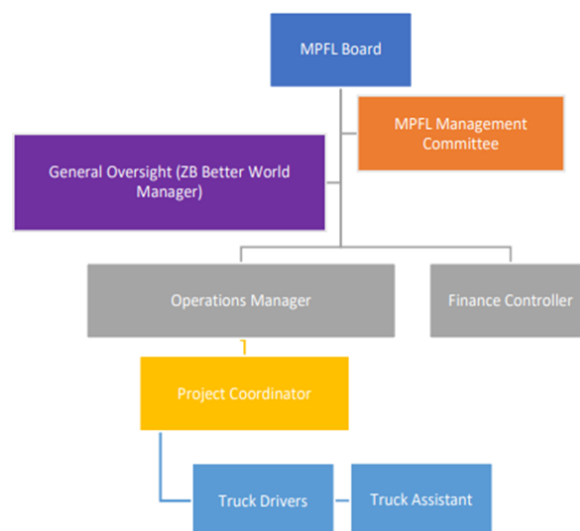


Figure 3: Organogram for the Manja Pamodzi recycling and value chain enhancement project.

3.3.5 Wastewater treatment

- In our design, the wastewater system for the MPFL plastic processing site is divided into two categories: Wastewater from the Toilets, Kitchen, and Showers: This wastewater goes directly to Lusaka Water Supply and Sanitation Company (LWSSC) Municipal Sewer system; and
- Wastewater from the grinding process: Little to no generation will occur as we intend to use dry grinding machines.

3.4 Technology/Methods

The Manja Pamodzi value chain enhancement project processing site for post-consumer waste will house a dry crusher for PET, and a bale press for aluminum cans and cardboard. A dry crusher is designed to break down PET bottles and other materials without the use of water, making it a water-efficient option. It simplifies the recycling process by reducing material size, making it easier to handle and process further. A bale press will be essential for compressing cardboard and aluminum cans into dense, manageable bales, significantly reducing volume for more efficient storage and transportation (Figure 4).

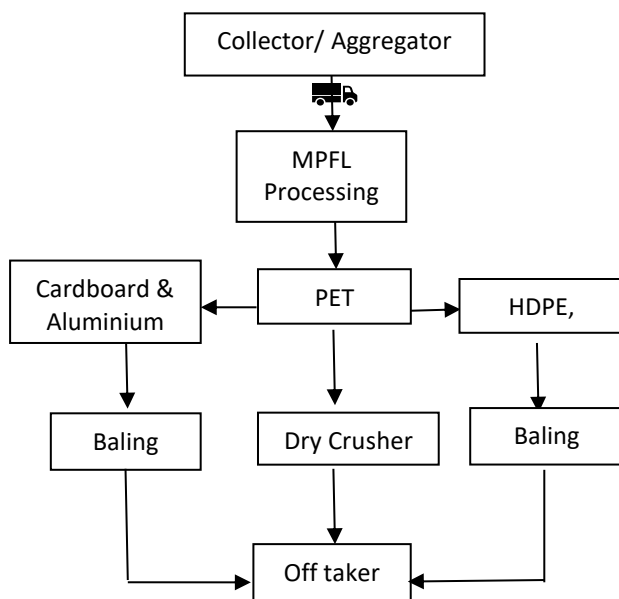


Figure 4: process flow diagram for the project - from collector to off taker.

3.5 Project Facilities

The processing site will be oriented in such a way that resources like land, wind, and sunlight will be utilized to their optimum extent. The shorter side of building will be oriented along the East West side to reduce heating effect as this would be the path followed by the sun. The prevailing wind direction is east to west. The proposed building will have one floor with the conceptual design showing 50 by 25m. The figure below shows the conceptual design of the

Manja Pamodzi value chain enhancement processing.

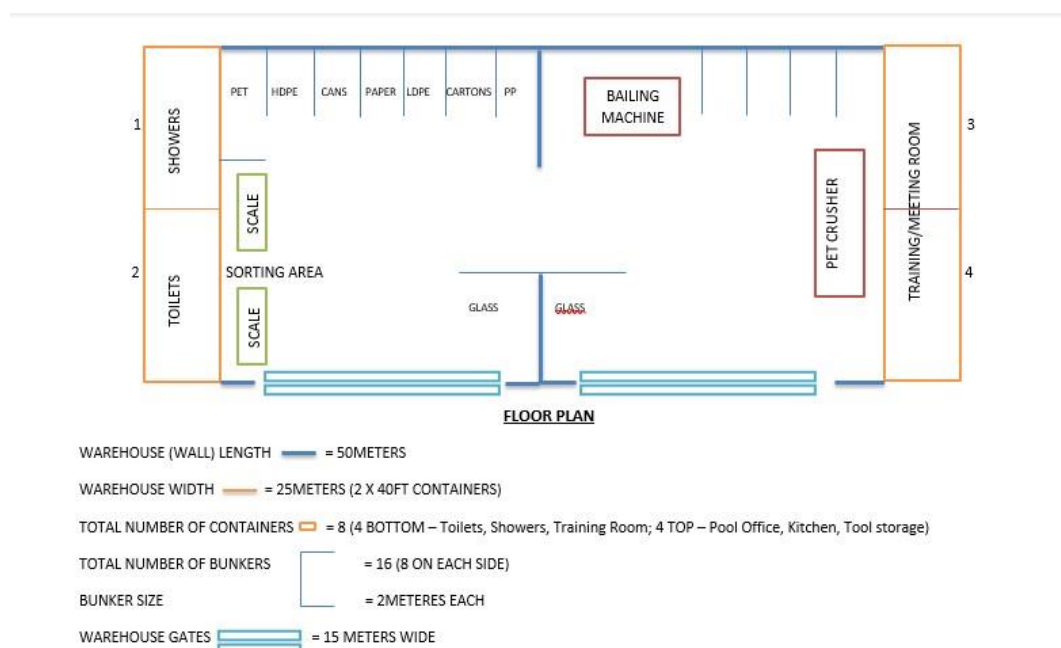


Figure 5: warehouse design proposal for the project.

3.6 Raw Materials

The processing site will be set up under the Manja Pamodzi value chain enhancement project on Zambia Breweries land that is part of the expansion project. Raw materials to be used will be post-consumer solid waste will be PET bottles, Aluminum cans, LDPE, HDPE, PP, Cardboard, and paper.

Table 6: Raw materials for the site set up

	Raw material	Source/Supplier	Mode of Delivery
1.	Laterite, gravel for base layer	Authorised or licensed local suppliers	To be transported on road to site
2.	Cement	Authorised or licensed local suppliers	To be transported on road to site
3.	Concrete for slab foundations, rebar (for reinforcing concrete)	Authorised or licensed local suppliers	To be transported on road to site
4.	Water	Lusaka Water and Sewerage Company	Onsite Lusaka Water and Sewerage Company facilities on site
5.	Electrical power	ZESCO Ltd and portable gensets and solar units for back-up	ZESCO Ltd power supply system, solar system to be installed

6.	Other building materials (timber, steel, aluminum, paints, door and window frames, nails, sewer pipes, etc. wires, glassware, etc.)	Authorized or licensed local suppliers or to be imported.	To be transported on road to site
----	---	---	-----------------------------------

3.7 Hazardous Materials, Equipment, and their Storage on Site

During the operation phase of the project, only non-hazardous material will be used on site. This notwithstanding, Manja Pamodzi will still put in place the following safety measures to ensure occupational health and safety:

- Workers on site will be required to have full PPE to include, safety shoes, goggles, PVC gloves, and overalls.
- Appropriate signage throughout the workspace for appropriate PPE, hand washing stations, and segregation zones.
- Adherence to a strict standard operating procedure (SOP) to encompass, training and compliance, regular inspections, and an emergency response plan.

4.0 PROJECT ALTERNATIVES

4.1 Project or No-Project alternatives

If the project is not implemented, there will be missed opportunities to address critical environmental and social challenges associated with post-consumer plastic waste in our community. This includes the perpetuation of environmental degradation, heightened public health risks, and the loss of economic opportunities for vulnerable groups such as waste collectors.

On the other hand, if the project is implemented, it will enable us to effectively collect and process post-consumer plastic waste into flakes, thereby enhancing the value chain and promoting sustainable waste management practices. This will contribute to environmental protection, public health improvement, and progress towards achieving Sustainable Development Goal 11 which speaks to sustainable cities and communities.

Therefore, the implementation of the project is the preferred option, as it offers tangible benefits for our community, aligns with our organizational objectives of promoting sustainability, and supports broader national and international development goals.

4.2 Site Alternatives

There were 3 alternative sites considered for the project. Two sites were in Lusaka and one in Ndola. The Lusaka site was preferred because it satisfied the project criteria. Site alternatives considered for location of the project was based on the presence of a value chain, collection network and availability of Land. ZB, to which MPFL is a subsidiary of, has two plants, one in Ndola and another in Lusaka.

(i) Option 1: Locating the Processing Plant at ZB Lusaka

The Lusaka plant has adequate space to accommodate the set-up of an aggregation and processing site, owing to the plant expansion project. In addition, MPFL already has an established value chain and community network in the surrounding communities which will ensure consistent supply of raw material and increase in tonnage collections from communities. Manja Pamodzi will be able to use the said land at no cost. Further, land use activities in the area surrounding the proposed project site are not in conflict with the proposed facility as the site is in an industrial area. Additionally, being on ZB property guarantees increased security for the equipment and most importantly is located in the catchment of MP's biggest collector network.

(ii) Option 2: Locating the Processing Plant at ZB Ndola Plant

This option was considered however, the collection network in Ndola is not as vast in comparison to Lusaka and does not have adequate space to facilitate the project activities. For these reasons, this option was not preferred.

(iii) Option 3: Locating the Processing Plant away from the ZB plants

Manja Pamodzi also considered renting a warehouse for the project activities. This option proved to be costly to MPFL. This option was not preferred.

4.4 Design Alternatives

Two alternatives were considered. These are:

(i) Option 1: Construction of warehouse using steel from and concrete

This option meant constructing a warehouse using a steel from and concrete to house the processing area, meeting room, bathroom, kitchen, and offices. This option proved to be costly and time consuming and so was not the preferred option.

(ii) Option 2: Construction of warehouse using prefabrication and shipping containers

This option meant constructing the aggregation and processing site using 40-foot containers and prefabrication. With the processing and aggregation being housed in the 40-foot containers while the offices, meeting room, toilets and showers were to be housed in prefabricated units. This option was less costly and hence the preferred option.

4.4 Sources of Water Alternatives

(i) Option 1: Use of existing water supply from Lusaka Water Supply and Sanitation Company

There exists a consistent water supply from Lusaka Water Supply and Sanitation Company which will be more than adequate for operations and hence the preferred option.

(ii) Option 2: Use of existing boreholes

There are 2 existing boreholes on site that are the primary water source for all the processes at the ZB plant. Thus, tapping from this source may lead to disruptions in the plant activities as well as exceeding the abstraction limit set for ZB by WARMA. And hence this was not a preferred option.

(iii) Option 3: Sinking a Borehole

This entails sinking a new borehole for water supply for the project site. This is an option that may be considered in future.

4.5 Sewage/wastewater Management Alternatives

Wastewater from the showers and toilets will be into the automated ZB wastewater system which is in turn fed into the LWSSC system.

4.6 Power Supply Alternatives

The project site is located in an area serviced by the power company, ZESCO Limited. It is, however, preferred that a backup power supply system be installed to ensure that there are no operational interruptions. Below are the power supply alternatives which the Agency considered.

(i) Existing power supply system from ZESCO Limited as the main source of power.

(ii) Use of the existing power supply from ZESCO Limited, with adjustments to the system, as the main source of power, and solar energy as backup

sources.

Manja Pamodzi preferred option ii to ensure that there are no operational interruptions when supply from ZESCO Limited is off.

4.7 Technology Alternatives

Considering the technological aspects of the project, Manja Pamodzi explored various alternatives to enhance efficiency and effectiveness in post-consumer plastic waste management:

- (i.) Mechanical Sorting Systems: Implementing automated mechanical sorting systems to streamline the separation of different types of post-consumer plastic waste. This technology offers higher sorting accuracy and throughput compared to manual sorting, leading to improved efficiency and reduced labor costs.
- (ii.) Advanced Pelletizing Technology: Exploring advanced pelletizing technology for processing post-consumer plastic waste into pellets. This includes innovative machinery and equipment that can handle a wide range of plastic materials, optimize pellet quality, and increase production capacity while minimizing energy consumption and operational costs.
- (iii.) Blockchain Technology for Traceability (BanQ): Leveraging blockchain technology to establish transparent and traceable supply chains for post-consumer plastic waste. This enables stakeholders to track the origin, movement, and transformation of plastic materials throughout the recycling value chain, enhancing accountability and trust.

4.8 List of Chosen Alternatives in Order of Preference

The alternatives below were considered and preferred as listed below.

4.8.1 Project or No-project alternatives

- (i) Project implementation
- (ii) No project

4.8.2 Site alternatives

- (i) Proposed site
- (ii) No other site

4.8.3 Design alternatives

- (i) Proposed design
- (ii) No other design

4.8.4 Source of water alternatives

- (i) Option 1: Use of existing water supply from Lusaka Water Supply and Sanitation Company
- (ii) Option 2: Use of existing boreholes
- (iii) Option 3: Sinking a Borehole

4.8.5 Wastewater Management alternatives

- (i) Proposed wastewater treatment system
- (ii) No other alternative

4.8.6 Power supply alternatives

- (i) Use of the existing power supply from ZESCO Limited, with adjustments to the system, as the main source of power, and solar and gensets as backup sources
- (ii) Existing power supply system from ZESCO Limited as the main source of power

5.0 DESCRIPTION OF BASELINE ENVIRONMENT

5.1 Location

Lusaka is situated between latitudes 15° and 30° south and between 25° and 30° east of the Equator. It is bordered by three (3) districts namely, Chongwe, Chilanga, and Kafue, and shares an international boundary with Zimbabwe to the south. The City of Lusaka has a total land coverage of approximately 360 Km² (Zambia Tourism Board, 2023). This geographical context helps to define the scope of waste management efforts and the logistical considerations necessary for implementing the project.

5.2 Physical Environment

5.2.1 Climate

Lusaka City is located in Agro-ecological region II, which is a medium rainfall zone with annual precipitation averaging 800–1,000mm. The rainy season spans 6.7 months from October to May, with January being the wettest month, receiving 185.42mm of rainfall. The climate in Lusaka is mild, warm, and temperate. This climate baseline is crucial for the Manja Pamodzi Project, as it influences the timing and efficiency of waste collection, recycling operations, and the overall effectiveness of value chain enhancements in Lusaka. The average temp ranges from 19.4°C to 30.6°C .

5.2.2 Air Quality

The proposed project site is in Lusaka's heavy industrial area, where air quality is generally variable due to the presence of several processing industries. To assess the air quality, ambient air monitoring was conducted at two locations within the site using a handheld Respirable Particulate Matter (PM) sampler. The readings for PM_{2.5} and PM₁₀ were recorded at each location, with the results presented in Table 8.

Table 7 Results of dust/particulate matter from the project site

Location	PM ₂₅ (µg/m ³)	PM ₂₅ Maximum Acceptable Concentration (µg/m ³ /year)	PM ₁₀ (µg/ m ³)	PM ₁₀ Maximum Acceptable Concentration (µg/m ³ /day)
Coal shed area	12.0 0		15.0 0	
Fuel station	13.0 0	15.00	14.0 0	70.00

As observed in table 8 above, the levels of PM_{2.5} recorded varied between 12 – 13ug/m³ while

that of PM₁₀ varied between 14 – 15ug/m³. Once the proposed project activities commence, stringent air quality monitoring program will be implemented and strictly adhered to. This baseline will help us to ensure that recycling and waste processing activities are conducted within safe environmental parameters, minimizing any additional impact on the air quality in an already industrialized area.

5.2.3 Soil and Land use

Lusaka lies in the agro-ecological region III. Soils in agro-ecological region III are highly weathered and leached and characterized by extreme acidity. Consequently, the soils have few nutrients available for plant growth and are high in exchangeable aluminum and manganese, both of which are toxic to crops unless soils are limed to increase pH (Source: "Description of cropping systems, climate and soils in Zambia" by Dr. R. Chikowo, available at <https://www.yieldgap.org/zambia>). The predominant soil type in the industrial area is clayey - sand soil. The land use around the project area is mixed-use, meaning it encompasses both industrial and commercial activities. It is essential that project activities are in tandem with the land use patterns and have minimal potential environmental impact.

5.2.4 Landscape and Topography

Lusaka District lies at altitude of approximately 1250 to 1455 meters above mean sea level. Specifically, the project site at Zambian Breweries within Lusaka District is situated at an altitude ranging from 1269 to 1267.8 meters above mean sea level. Additionally, the proposed project area is generally flat, with local areas of higher relief but gently slopes towards the north. This baseline will aid in the planning the layout and infrastructure of processing plant, ensuring effective drainage and minimizing potential environmental impacts related to the site's elevation and slope.

5.2.5 Groundwater and Surface Water

There are no surface water bodies within at least a 3.5km radius of the proposed project area. As such, no water samples were recovered from any surface water body during the assessment.

Three (03) groundwater samples (including a blind duplicate) were recovered from two active boreholes on site from the nearest taps. The two boreholes are the primary sources of water supply at the plant.

Presented in table 9 below are laboratory results of the groundwater samples recovered during the assessment:

Table 8: Laboratory Results of Groundwater

Sample Code	Hydrocarbons (ppm)	Oils and Grease (ppm)	Conductivity (µs/cm)	Total Dissolved Solids (mg/l)	pH

ZBWS 01	<0.005	<0.005	730	366	7.12
ZBWS 02	<0.005	<0.005	725	363	7.16
ZBWS 03	<0.005	<0.005	690	346	7.11
ZBWS 04	<0.005	<0.005	720	361	7.14

5.2.6 Noise Level

The project site consists of some sections within the plant where noise is excessively high and low in areas far away from the processing units. An IEC 651 type II sound level monitor with a measuring range of 30 – 130dB was used to collect noise data in the dBA scale (energy-averaged sound level) at three different points about 100m apart in all the three noise level ranges. Understanding the noise level baseline will help in designing and implementing noise control measures to mitigate potential disturbances during the construction and operation phases.

Table 9: Noise level readings at different points within the proposed site

Noise Level Readings (dB)			
Processing area		Warehouse	
Low (30 - 80 dBA)	Low (30 - 80 dBA)	Low (30 - 80 dBA)	Low (30 - 80 dBA)
Med. (50 - 100dBA)	Med. (50 - 100dBA)	Med. (50 - 100dBA)	Med. (50 - 100dBA)
High (80 - 130dBA)	High (80 - 130dBA)	High (80 - 130dBA)	High (80 - 130dBA)

5.3 Socio-economic baseline

Zambia is among the world's poorest nations with 64% of the population falling below the poverty line. There is a steady trend among the youth towards urbanization with the greatest influx seen in the cities of Lusaka, Kitwe and Ndola. Population growth of 4.15% per year at these centers puts increasing demand on the already strained civil infrastructure. There is a 57% youth unemployment rate in urban areas, with the majority (80%) of the working-age population relying on the informal sector for income. This baseline underscores the need for Manja Pamodzi project, making the project's potential to provide sustainable livelihoods and reduce poverty particularly impactful for the local community.

5.3.1 Demographics

Lusaka Province comprises of seven (07) Districts, with an estimated 456,957 housing units

and a total population of 2,198,992. Out of the total population, 1,080,152 were males while 1,118,844 were females. However, the project area is entirely within Lusaka urban whose total population was estimated at 125,030 with 25,572 housing units. Understanding the demographics of Lusaka informs the scale and the scope of the project.

5.3.2 Health

Lusaka City is home to the country's largest referral hospital, The University Teaching Hospital (UTH). There is at least one health care facility within every 15km in Lusaka. Lusaka has a total of 170 Urban Health Centres, 11 Health Posts, 3 Level 3 Hospitals, 1 Level 2 Hospital and 9 Level 1 Hospitals. These Health Centres are run by the Government through the Ministry of Health and cooperating partners while others are privately owned and funded (List of Health Facilities in Zambia, 2012).

There is a Company Clinic within the premises where employees are treated for cases not needing specialist attention.

5.3.3 Education

Zambia's education system, like many in developing African countries, is divided into five tiers: primary, middle, secondary, tertiary, and vocational education. Zambia has accomplished close to all-inclusive elementary school completion levels – national statistics indicate a completion rate of 91.8 per cent at Grade 7. Even so, this covers noted extensive provincial differences, with, for instance, the northern region recording 81.3 per cent (72 per cent for female students) and Lusaka 78.6 per cent. Overall, girls continue to be at a disadvantage with a large number of them dropping out in the upper primary and secondary grades, and poorer levels of transition to junior secondary and senior secondary levels. The system faces challenges with high dropout rates.

Lusaka City has a combined total of about 411 combined Community, Primary and Basic Schools and 69 Secondary Schools. There are several early childhood, primary and secondary schools including tertiary institutions within 1km of the Zambian Breweries. One of the project's activities includes conducting waste management education and awareness programs in these schools.

5.3.4 Built Environment

Existing facilities within the project site include office blocks, ablution facilities, warehouses, boreholes and water treatment unit, access roads, processing units, coal storage shed, filling station consisting of two aboveground diesel tanks and two pumps, waste storage area and wastewater treatment plant. Understanding the built environment baseline provides the necessary infrastructure foundation for the efficient project execution, ensuring that existing facilities are leveraged effectively to support project goals.

6.0 STAKEHOLDER CONSULTATION

Stakeholders were identified and consulted as part of the preparation of the ESMP. The consultations were held during the ESIA process with representation from Lusaka Water Supply and Sanitation Company Limited, ZESCO Limited, District Education Board, Lusaka City Council, Ministry of Health- Lusaka District Health Office and meetings with Companies in the Vicinity and Lusaka Water Supply and Sanitation Company. The purpose of consultations were to enhance understanding on issues that included (i) water utility lines traversing the project site and the proposed wastewater management facility; (ii) power lines traversing the project site; (iii) baseline information relating to the education sector Lusaka; (iv) guidance from the Council on issues of Change in land use, required permits, public health aspects including solid waste management and any other requirements emanating from applicable laws and bylaws; (v) baseline information relating to the health sector in Lusaka Province and Lusaka City; (vi) feedback on project from companies in the vicinity related to description, purpose, Project components; and potential project impacts and potential mitigations

A separate Stakeholder Engagement Plan (SEP) was prepared for the Project, based on the World Bank's Environmental and Social Standard 10 on Stakeholder Engagement. The SEP and the Environmental and Social Commitment Plan (ESCP) that has been prepared and will be updated as the project progresses.

7.0 ENVIRONMENTAL AND SOCIAL RISKS, IMPACTS AND MITIGATION MEASURES

The proposed upscaling of a recycling initiative involves adding two small-scale crushers and utilizing prefabricated portable containers. Several environmental and social risks and impacts were identified during the screening and scoping process and the mitigation measures included in the ESMP. The ESMP aims to ensure effective management of environmental and social risks and impacts associated with the project, facilitate compliance with regulatory requirements, promote stakeholder engagement and participation, and enhance project sustainability through the implementation of best practices in environmental and social management. The environmental and social risks, impacts and mitigation measures relating to the proposed project have been summarized in table 12.

Table 10: Summary of Environmental and Social Risks and Mitigation Measures

CONSTRUCTION PHASE							
Activity	Aspect	Environmental/ Social Impact	Mitigation Measures	Responsible Party	Monitoring /Performance Indicators	Frequency of Monitoring	Cost of Monitoring and Mitigation
Land clearing, stockpiling of construction materials, transportation and offloading of construction materials to the site.	Dust emissions	Reduced Ambient Air Quality	<ul style="list-style-type: none"> ▪ Suppress dust emissions during earthworks by sprinkling the worked areas with water using a water bowser. ▪ Limit speed of trucks and heavy vehicles on construction sites to 20 km/h to reduce dust emissions from vehicle movement. ▪ Provide dust masks to the workforce at points of high dust generation. ▪ Regular and proper maintenance of construction vehicles to reduce exhaust emissions. ▪ Prohibit idling of vehicles on the project site. ▪ Use low sulphur fuels in construction vehicles and 	Operations Manager	<p>Absence of dust</p> <p>Absence of complaints</p> <p>Dust levels within the statutory limits.</p>	Daily	As per contract

			<p>construction equipment, where applicable.</p> <ul style="list-style-type: none"> ▪ Regularly monitor air quality on the project site through the use of portable monitoring equipment. ▪ Avoid blasting activities by employing alternatives such as hydraulic hammers. ▪ Cover truck beds with tarpaulins during material transport. ▪ open burning of waste material at work sites will be Prohibit. <p>Construction material (sand, quarry dust, laterite etc.) will be moistened.</p>				
Movement and operation of heavy equipment and trucks,	Noise and vibration	Reduced/Loss of hearing and sleep disturbance	<ul style="list-style-type: none"> ▪ MPFL shall ensure that the contractor provides suitable PPE for the workers. ▪ Where workers are exposed to elevated sound levels, use of personal protective equipment such as earmuffs/plugs will be mandatory. ▪ Noise levels will be monitored to ensure that 	Operations manager	<p>Noise levels within the statutory limit.</p> <p>Records indicating vehicle maintenance</p> <p>Absence of complaints</p> <p>Records of PPE issued to workers</p>	Daily	As per contract

			<p>they do not exceed 55 dB (WB Environmental, Health, and Safety (EHS) Guidelines, Noise level guidelines) during daytime hours and not more than 45 dB in the night.</p> <ul style="list-style-type: none"> Operation hours for the construction phase will be limited to daytime hours. MPFL shall ensure that all equipment and machinery to be used on site undergo regular maintenance of construction vehicles and equipment. 				
Site clearing, digging and excavations	Stripping of topsoil and removal of vegetation	Soil Erosion	<ul style="list-style-type: none"> Preserve topsoil by stockpiling and covering it. Reinstate topsoil after completion of construction works, where possible for landscaping. Limit site clearance to the construction footprint. Direct runoff in the areas of the natural drainage system and provide for adequate drainage where possible. 	Operations Manager	<p>Presence of covered stripped topsoil</p> <p>Percentage of site cleared Vs. site restored.</p>	Weekly	As per contract

			<ul style="list-style-type: none"> ▪ Control earthwork activities during construction. Contract for the contractor should stipulate that, wherever possible, heavy earthworks should be carried out during the dry season to prevent soil from being washed away by the rain. ▪ Minimize soil compaction by avoiding the movement of heavy vehicles and machinery on wet soils and using wider tires where possible. 				
Site clearing, digging and excavations	stripping of topsoil and removal of vegetation	Land degradation	<ul style="list-style-type: none"> ▪ Limit the removal of vegetation to worksites only. ▪ Stockpile vegetative material at the edge of the cleared area and utilize it for reclamation of the site. Land restoration by way of planting vegetation. 	Operations Manager	<p>Presence of covered stripped topsoil</p> <p>Percentage of site cleared Vs. site restored.</p>	Monthly	As per contract
Digging and excavations, laying of foundation for	Oil leaks from construction vehicles and hazardous	Soil contamination	<ul style="list-style-type: none"> ▪ Except for minor or emergency cases, carry out all repair and maintenance work offsite. 	Operations Manager	<p>Absence of oils on the ground</p> <p>Presence of a</p>	Daily	As per contract

the building	chemicals		<ul style="list-style-type: none"> ▪ Use non-leaking containers for the storage of hazardous chemicals at the construction site. ▪ Store and handle oil, lubricants, and other hazardous substances in accordance with the Environmental Management (licensing) regulations SI No, 112 of 2013 and the EHS of the World Bank. ▪ Train personnel dealing with oil products (e.g., mechanics, maintenance personnel) in handling and storage oil and hazardous chemicals. All vehicles will refuel at existing fuel stations within Lusaka. 		<p>dedicated hazardous materials and chemical storage area</p> <p>Presence of spills kit on site</p> <p>Records of refueling at existing service stations</p> <p>Numbers of trainings held.</p> <p>Training attendance registers</p>		
	Occupational health and safety risks include exposure of workers to dust emissions,	Reduced workers safety	<ul style="list-style-type: none"> ▪ Preparation and implementation of the health and safety management plan ▪ Personal Protective Equipment (PPE), including dust masks, Work suits, 	Operations Manager	<p>Records of risk assessments conducted.</p> <p>Records of trainings undertaken</p> <p>Records of number of</p>	Daily	As per contract

	<p>working at heights, and lifting of heavy materials, exposure to elevated noise levels, trips and falls</p>		<p>Gloves and ear plugs will be provided to workers.</p> <ul style="list-style-type: none"> ▪ Barricading tape and warning signs will be erected in appropriate places on the construction site (e. g. around construction sites) to avoid accidents. ▪ workers will be inducted in safety according to Employment Code Act. ▪ Safety talks will be held on a daily basis. ▪ Identify possible risks associated with construction activities and sensitize workers on safety practices. ▪ Conduct induction training for new workers. ▪ Conduct regular training on health and safety including safe working methods and the proper use of PPE and the dangers associated with no and/or incorrect use. ▪ Record any incidences and near misses regarding safety and sensitize workers 		<p>incidences and near misses</p> <p>Presence of safety signage on and around the site</p> <p>Records of PPE issued.</p> <p>Use of PPE issued.</p> <p>Records of training s conducted training registers.</p>		
--	---	--	---	--	---	--	--

			<p>continuously on safety measures.</p> <ul style="list-style-type: none"> ▪ The project site will be a restricted area and hence no unauthorized persons will be expected on site. ▪ A dedicated access for delivery and construction vehicles will be created. Workers working on heights shall be provided with harness safety belts. 				
Construction of the warehouse	Solid and hazardous waste generation	Land degradation	<ul style="list-style-type: none"> ▪ Sound waste management protocols will be observed, and waste bins will be placed in strategic points. ▪ Waste from the site will be collected by a licensed garbage collector at regular intervals. ▪ General good house-keeping practices will be strictly adhered to. ▪ Hazardous waste will be collected by a licensed hazardous waste collector. 	Operations Manager	<p>Waste disposal records.</p> <p>Number of waste receptacles.</p> <p>Segregated according to type of waste.</p>	Daily	As per contract
Construction and excavation	construction equipment	Visual intrusion	<ul style="list-style-type: none"> ▪ Machines such as cranes and excavators will not be 	Operations manager	Absence of idle machines on site	Weekly	As per contract

activities	and machinery such as cranes, excavators, trucks		parked on site when not in use.				
Digging and excavations, laying of foundation for the building	Oil leaks from construction vehicles and hazardous chemicals	Contamination of ground water	<ul style="list-style-type: none"> ▪ Except for minor or emergency cases, carry out all repair and maintenance work offsite. ▪ Use non-leaking containers for the storage of hazardous chemicals at the construction site. The storage area for the hazardous materials will have an impervious floor with bunding. 	Operations Manager	Monitoring records.	Monthly	As per contract
Movement of heavy earth moving equipment	Creation of potholes	Deterioration of public access roads	<p>Earth moving equipment will be transported on lowbed truck.</p> <p>The movement of heavy equipment will be limited to specific hours (06 -18 hours)</p>	Operations Manager	<p>Absence of material spills on the road.</p> <p>Logbook of vehicles accessing the site.</p>	Monthly	As per contract
Movement of delivery vehicles	Increased traffic	Reduced road safety	<ul style="list-style-type: none"> ▪ Road signs will be used to guide community members and construction workers on proper road use to reduce the risk of accidents. 	Operations Manager	<p>Records of accidents</p> <p>Presence of safety signage</p>	Daily	As per contract

			<ul style="list-style-type: none"> ▪ A speed limit of 20 Km/hour will be set for vehicles moving within the project area. ▪ MPFL shall ensure that drivers of construction vehicles are trained on safe road practices. Sensitize community members, especially children, on safe practices during road use. 		<p>Records of community sensitization conducted</p> <p>Records and number of trainings conducted with the drivers of construction vehicles</p>		
Construction of the warehouse	unfair employment	<p>Strain on Social Facilities due to increase in migrant workers.</p> <p>Child labour and forced labour</p> <p>Omit vulnerable groups/persons</p>	<p>MPFL will ensure that the contractor hires local community members to reduce, where possible, the number of migrant workers towards the project area of influence</p> <p>MPFL will ensure that the contractor adheres to minimum age for hire in preventing forced labour and child labour.</p> <p>MPFL will ensure the contractor provides fair employment opportunity,</p>	Operations Manager	<p>Presence of a trained first aider</p> <p>Presence of a first aid kit</p> <p>Records showing number of local people employed.</p>	Weekly	As per contract

	Public health and safety	Psychological and physical harm GBV/SEA/SH	<ul style="list-style-type: none"> Periodically sensitize workers and community member. Establish accessible project GRM and periodically sensitize community Sensitize workers and community on GBV/SEA/SH issues. Establish accessible worker GRM and periodically sensitize workers Introduce code of conduct for workers and signed by project workers. 	Operations manager and project coordinator	Records of sensitization initiatives Adherence to the GBV/SEA/SH policy	Quarterly	As per contract
OPERATION AND MAINTENANCE PHASE							
Activity	Aspect	Environmental/ Social Impact	Mitigation Measures	Responsible Party	Monitoring Indicators	Frequency of Monitoring	Cost of Monitoring and Mitigation
Sorting and processing of PET	Land degradation	Solid waste generation	<ul style="list-style-type: none"> Implement a comprehensive waste management plan. Use designated bins for different waste types. Engage licensed waste collectors. 	Operations Manager and Project Coordinator	Segregation of waste Training records on waste management procedures	Weekly	\$ 3,810

			<ul style="list-style-type: none"> Promote recycling and reusing waste materials where possible. 				
Operation of machines and equipment	Worker injuries and health risks	Occupational health and safety	<ul style="list-style-type: none"> Provide PPE such as gloves, ear buds, safety shoes, and helmets. Conduct regular safety training and drills. Install emergency showers and eye wash stations. Ensure proper signage and barricading of hazardous areas. 	Project Coordinator	<p>Machine Maintenance and safety checks</p> <p>Records of PPE issued.</p> <p>Training and certification of staff</p>	Quarterly	\$ 935
Use of PET flaking machines and balers	Risk of equipment-related injuries	Mechanical hazards	<ul style="list-style-type: none"> Install safety guards and emergency stop buttons on machines. Conduct regular maintenance and inspections. Train workers on safe operation procedures. Provide first aid facilities and trained personnel 	Operations manager and Project Coordinator	<p>Presence of a first aid kit</p> <p>Presence of a trained first aider</p> <p>Presence of safety signage</p>	Monthly	\$240
Storage of flaked PET and other materials	Increased risk of fire	Fire hazard	<ul style="list-style-type: none"> Install fire detection and suppression systems. Store flammable materials away from ignition sources. 	Project Coordinator	<p>Segregation of waste</p> <p>Presence of fire safety signage</p>	Weekly	\$336

			<ul style="list-style-type: none"> • Conduct regular fire drills and training. • Maintain clear and accessible emergency exits. 		Records and number of fire drills and trainings conducted		
Operation of equipment at demobilization	Reduced/Loss of Hearing due to Elevated noise levels	Noise Pollution	<ul style="list-style-type: none"> • MPFL shall ensure provision of suitable PPE for the workers and members of staff. • Where workers are exposed to elevated sound levels, use of personal protective equipment such as earmuffs/plugs will be mandatory. • Noise levels will be monitored to ensure that they do not exceed 55 dB (WB Environmental, Health, and Safety (EHS) Guidelines, Noise level guidelines) during daytime hours and not more than 45 dB in the night. • Operation hours for the construction phase will be limited to daytime hours. 	Project Coordinator	<p>Records of PPE issued.</p> <p>Noise levels below 55dB during daytime and not more than 45 dB in the night</p> <p>Presence of safety signage showing the required PPE for each work area</p>	Weekly	PPE costs
Recruitment of workers	Unfair employment	Influx of workers	<ul style="list-style-type: none"> • implementation of Labor Management Procedures 	Operations Manager	Adherence to the LMP	monthly	

		Exploitation of vulnerable	(LMP) to ensure fair employment opportunity, establish accessible worker GRM and periodically sensitize workers and ensure minimum age for employment in preventing forced labour and child labour				
	Public health and safety	Psychological and physical harm GBV/SEA/SH	<ul style="list-style-type: none"> • Periodically sensitize members of staff and community member. • Establish accessible project GRM and periodically sensitize community • Sensitize workers and community on GBV/SEA/SH issues. • Establish accessible worker GRM and periodically sensitize workers • Introduce code of conduct for workers and signed by project workers. 	Operations manager and project coordinator	Records of sensitization initiatives Adherence to the GBV/SEA/SH policy	Quarterly	Operating costs

8.0 IMPLEMENTATION ARRANGEMENTS AND ESMP SUPERVISION AND MONITORING

8.1 Implementation Arrangement

The overall responsibility for implementation of the Environmental and social Management Plan at all phases of the proposed project shall be that of management of Manja Pamodzi. The line Manager to be directly responsible for the implementation of all proposed mitigating measures is the Project Manager who will be assisted by Environmental and Safety Officers. Details of the responsibilities assigned to the design consultant and consultants have been summarized below. The table below shows the summary of coordination of responsibilities during the project implementation. Table 11 below summarizes the implementation arrangements.

8.2 ESMP Budget

The costs of implementing the ESMP for the Contractor and Consultant will be included in the tender documents and shown as a line item on the BOQ. It is the contracting party's responsibility to ensure that they have provided adequate financial resources to undertake all responsibilities as prescribed in this ESMP.

Table 11: Implementation arrangement

Responsible Party	Roles and Responsibilities
Manja Pamodzi	<ul style="list-style-type: none"> • Ensure that tender documents include the ESMP and the cost of ESMP implementation is included in the contract. • Ensure that contracts include a condition to implement and comply with the ESMP, including the preparing of Contractor Environmental and Social Management Plan and Health and Safety Management Plan prior to commencement of works.
ZEMA	<ul style="list-style-type: none"> • Enforcement of environmental regulations and ensuring that the Manja Pamodzi project complies with the Environmental Management Act of Zambia • Approval of the submitted ESMP and compliance monitoring through periodic inspections and audits and ensure to ensure implementation of the ESMP as approved. • ZEMA may require updates to the ESMP if there are significant changes in the project scope, activities, or environmental conditions during implementation.
Ministry of Labour (OHS department)	<ul style="list-style-type: none"> • Ensure compliance with the national OHS regulations. • Workplace inspection and audits of the project sites to assess compliance with workplace safety requirements. • Identification and management of workplace hazards, including those related to the handling of solid waste and recyclables.

	<ul style="list-style-type: none"> Ensure reporting and record-keeping of any workplace accidents, injuries, and health-related issues.
--	--

8.3 Monitoring and Supervision

Table 12: Monitoring Schedule

Monitoring Type	Description	Responsible	Timeline
Baseline Environmental Monitoring	Assessment of existing environmental conditions (e.g., air quality, water quality, waste management) before the project begins.	Manja Pamodzi Project Coordinator, ZEMA	Before project commencement
Site Inspections	Regular inspections to ensure adherence to environmental and social management practices on-site, including waste segregation and worker safety.	Manja Pamodzi Operations Manager	Daily during project implementation
Waste Management Monitoring	Monitoring of proper collection, handling, and disposal of solid waste generated during project activities.	Manja Pamodzi Team	Ongoing, weekly or biweekly
Occupational Health and Safety Monitoring	Monitoring the safety measures and working conditions for employees and waste collectors, ensuring compliance with safety protocols.	Operations Manager and Project Coordinator	Daily
Community Engagement Monitoring	Tracking community involvement and addressing concerns related to environmental and social impacts. Ensuring that stakeholder communication is maintained.	Operations Manager and Project Coordinator	Ongoing
Post-Implementation Environmental Audit	Final environmental audit to evaluate the overall environmental impact of the project and assess the effectiveness of the mitigation measures.	ZEMA, Independent Auditor	Upon completion of major project activities
Corrective Action Monitoring	Follow-up monitoring on any corrective actions required by ZEMA or identified during internal audits.	Operations Manager and Project Coordinator	As needed, based on audit findings

Social Impact Monitoring	Monitoring social impacts, including effects on local communities and livelihoods, ensuring that no negative impacts arise from project activities.	Project Coordinator, M&E Specialist	Quarterly or as required
Annual Performance Evaluation	Comprehensive review of environmental, social, and operational performance, ensuring the ESMP is effectively implemented and identifying areas for improvement.	Manja Pamodzi Team	Annually, at the end of each year

8.1 Incident Reporting

The PIU needs to ensure MPFL has established incident reporting procedures. In case of an incident or accident related to a project that has or is likely to have a significant adverse effect on the environment, affected communities, the public, or workers, MPFL must inform the PIU within 24 hours who should then inform the Bank.

Notification to the Bank:

The PIU to notify the Bank electronically within 48 hours of becoming aware of the incident or accident. Include details about its nature, circumstances, and any actual or potential effects or impacts.

Any severe injury (requiring off-site medical care) or fatality incident shall be reported to the Bank within 24 hours with basic information. A detailed incident report including the following will be submitted within 10 working days:

- Detailed incident report with a root cause analysis.
- Corrective action plan on immediate mitigation measures in case of continuing danger (e.g., fencing, signboard, guards), compensation to the affected family based on a clear rationale, risk assessment and correct application of ESHS management procedures. Medium and long-term mitigation measures including enhancement of safety measures, audits, and additional training.

These procedures ensure that incidents and accidents are managed effectively, and appropriate measures are taken to prevent future occurrences.

9.0 DEMOBILIZATION, COMMISSIONING, AND MAINTENANCE PLAN

The transition between the project phases will be characterized by three major activities, namely, demobilization by the contractor at the end of construction, rehabilitation of the office complex and support facilities and commissioning of processing equipment during the operational phase. The table below highlight the actives at various stages.

Table 13: Demobilization, Decommissioning and Maintenance Plan

Phase	Activities
End of Construction Phase	
Demobilization by the Contractor	<ul style="list-style-type: none"> • Removal of all excess construction material from the project site • Continuous removal of all excess vegetation and soils • Relocation of construction machinery
During the Operational Phase	
Maintenance of the warehouse and support facilities	<ul style="list-style-type: none"> • Periodic structure monitoring and maintenance • Refurbishing and repainting of the warehouse
Commissioning of processing Equipment	<ul style="list-style-type: none"> • Installation and operationalisation of the processing equipment (crushers, bailing machine)

During the construction and operational phases, MPFL will adopt a continuous rehabilitation system that will involve re-vegetation of cleared areas. This will be adopted post closure to restore the area to near pre-constructional conditions. Moreover, areas that will show elevated levels of hydrocarbon contamination will be remediated and the highly affected areas of soils will be stripped and treated.

10.0 REFERENCES

1. The Environmental Management Act, S.I No. 12 of 2011.
2. The Environmental Impact Assessment Regulations, S.I No. 28 of 1997.
3. The Environmental Management (Licensing) Regulations, S.I No. 112 of 2013.
4. The Solid Waste Management Act, S.I No. 20 of 2018.
5. The Workers' Compensation Act, S.I No. 10 of 1999.
6. The Local Government Act, S.I No. 2 of 2019.
7. The Employment Code Act, S.I No. 3 of 2019.
8. The Occupational Health and Safety Act, No. 36 of 2010.
9. The United Nations Framework Convention on Climate Change.
10. The World Bank Group's Environmental and Social Framework
11. Environmental Management Act, No. 12 of 2011 read together with the Environmental Management (Amendment) Act No.8 of 2023
12. Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, Statutory Instrument No. 28 of 1997
13. Extended Producer Responsibility SI No, 65 of 2018
14. Gender Equity and Equality Act No. 22 of 2015
15. Workers Compensation Act
16. Factories Act
17. Human Rights Commission Act, Cap. 48
18. Persons with Disabilities Act No. 6 of 2017
19. Public Health Act, Cap 295 and its Subsidiary Legislation
20. Environmental Impact Assessment Regulations SI No. 28 of 1997
21. Employment Code Act No. 3 of 2019
22. Non-Governmental Organizations Act, 2009
23. National Gender Policy (NGP), 2014
24. Employment of Children and Young Persons Act, 1994