

ENVIRONMENTAL MANAGEMENT PLAN

FOR THE
THE ESTABLISHMENT OF A MILLING PLANT ON A 2 HA PORTION
OF FARM IRVINGTON NO. 744 IN GROOTFONTEIN,
OTJOZONDJUPA REGION



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1. INTRODUCTION AND BACKGROUND

The Irvington Irrigation projects proposes the construction and operation of Maize Milling Plant on a portion situated on Farm Irvington No. 744 within the Grootfontein Constituency, Otjozondjupa Region in Namibia, to cater for the maize produced on the farm. The plant will be developed on a 2 hectares site on the farmed land with 120 hectares in total. The proposed Maize Milling Plant would process a raw Non-GMO to produce the maize flour. The by-products produced would be used for animal feed. Therefore, the Nghivelwa Planning Consultant has been appointed to conduct an Environmental Impact Assessment and Environmental Management Plan (EMP) for the proposed development. The Environmental Impact Assessment has been conducted to meet the requisites of Namibia's Environmental Management Act (No. 7 of 2007).

2. SCOPE

The objectives of the scope of the EIA were to ascertain key issues of the environmental impacts that are likely to be more important during all the phases of the Project. Relevant environmental data have been compiled by making use of primary data which is the site assessment done on the 15th of March 2020 and secondary data. Potential environmental impacts and associated social impacts were identified and addressed in this report.

The project will comprise two distinct phases, namely construction and operation. The decommissioning and closure phase is considered at a high level in order to understand the potential for residual impacts. This is because the plant is estimated to run for a period of 50 years with scheduled maintenance and ongoing equipment replacement or upgrades. This would allow the plant to operate for a longer period. Thus, a specific decommissioning and closure plan has not yet been developed. However, when it comes to the decommissioning phase, an Environmental Impact Assessment (EIA) will be required and the disposal of decommissioned equipment and hazardous contaminated materials should be disposed following the disposal of hazardous material legislation

3. OBJECTIVES OF THE PROJECT

The objectives of this project are as follow:

- To recommend the activities for mitigation of pollution like air, water, soil, noise, ecology and social affect.
- To ensure that project will be carried out in a sustainable way.
- To provide employment opportunities to the locals

The project activities influencing the following environmental attributes have been studied and their impacts on the following attributes have been assessed.

- Air Environment
- Noise Environment
- Biological Environment
- Socio-Economic Environment
- Health and safety

4. THE NEED FOR THE PROJECT

The maize meal is one of the daily meal in Namibia. As the population of this country increases, the maize flour demand increases too. Thus, the Irvington Irrigation Project proposes to add the maize mill plant on its irrigation project to cater for the demand of the maize flour in the country and to add value to its project. Individuals and private suppliers will be purchasing the maize flour directly from Irvington project.

5. POLICY AND OTHER RELEVANT LEGISLATIONS

SUBJECT	INSTRUMENTS AND CONTENT	APPLICATION TO THE PROJECT
The Constitution of the Republic of Namibia	<p><i>General human rights – eliminates discrimination of any kind</i></p> <p><i>The right to a safe and healthy environment</i></p> <p><i>Affords protection to biodiversity</i></p>	<p><i>Ensure these principles are enshrined</i></p> <p><i>in the documentation of the exploration project</i></p>
Environmental Management Act EMA (No 7 of 2007)	<p><i>Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.</i></p>	➤
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 487)	<p><i>Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).</i></p>	➤
Forestry Act No 27 of 2004	<p><i>Provision for the protection of various plant species</i></p>	<p><i>Some species that occur in the area are protected under the Forestry Act and a permit is therefore required to remove the species</i></p>
Hazardous Substances Ordinance 14 of 1974:	<p><i>Control of substances which may cause injury</i></p> <p><i>or ill-health or death of human beings because</i></p> <p><i>their toxic, corrosive, irritant, strongly sensitizing or flammable nature</i></p>	<p><i>The waste generated on site and at the campsite should be suitably categorised/classified and disposed of properly and in accordance with the measures outlined in the Ordinance and Bill</i></p>
The Nature Conservation	<p><i>Prohibits disturbance or destruction of protected birds without a permit. Requires a permit for picking (the definition of “picking”</i></p>	<p><i>Protected plants will have to be identified during the planning phase of</i></p>

Ordinance (No. 4 of 1975)	<i>includes damage or destroy) protected plants without a permit</i>	<i>the project. In case there is an intention to remove protected species, then permits will be required</i>
Forestry Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	<i>Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22(1)). Prohibits the removal of and transport of various protected plant species.</i>	<i>Even though the Directorate of Forestry has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.</i>
Convention on Biological Diversity, 1992	<i>Protection of biodiversity of Namibia</i>	<i>Conservation-worthy species not to be removed if not absolutely necessary.</i>
Water Act 54 of 1956 Water Resources Management Act 24 of 2004	<i>The Water Resources Management Act 24 is presently without regulations; therefore the Water Act 54 is still in force The Act provides for the management and protection of surface and groundwater resources in terms of utilisation and pollution</i>	<i>Obligation not to pollute surface water bodies</i>
National Heritage Act 27 of 2004	<i>Section 48(1) states that “A person may apply to the [National Heritage] Council [NHC] for a permit to carry out works or activities in relation to a protected place or protected object</i>	<i>Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the National Heritage Council for relocation</i>
Labour Act 11 of 2007	<i>Details requirements regarding minimum wage and working conditions (S39-47).</i>	<i>Employment and work relations</i>
Health and Safety Regulations GN 156/1997 (GG 1617)	<i>Details various requirements regarding health and safety of labourers.</i>	<i>Protection of human health, avoid developments at areas that can impact on human health.</i>
Public Health Act 36 of 1919	<i>Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”</i>	<i>The Grootfontein Municipality should ensure that all contractors involved during the construction, operation and maintenance of the proposed project comply with the provisions of these legal instrument</i>
Water Act 54 of 1956	<i>The Water Resources Management Act 24 of 2004 is presently without regulations; therefore the Water Act No 54 of 1956 is still in force:</i>	<i>The protection of ground and surface water resources should be a priority. The main threats will most likely be concrete and hydrocarbon spills during construction and hydrocarbon</i>

	<p><i>Prohibits the pollution of underground and surface water bodies (S23(1)).</i></p> <p><i>Liability of clean-up costs after closure/ abandonment of an activity (S23(2)).</i></p>	<p><i>spills during operation and maintenance.</i></p>
<p>Townships and Division of Land Ordinance 11 of 1963</p>	<p><i>Details the functions of the Townships Board including what they consider when receiving an application for Township Establishment (S3)</i></p>	<p><i>The proposed layout and land uses should be informed by environmental factors such as water supply, soil etc. as laid out in Section 3.</i></p>

6. PROJECT DESCRIPTION

The project site is about 2 hectares on the farm of 120 hectares of the famed land. The project site is located on the Irvington Irrigation farm No. 744 in Grootfontein District in Otjozondjupa Region in Namibia. The mill plant will be a small scale plant situated on a farm which is already used for planting and harvesting of maize. The mill plant will add value to the products produced on the farm. The centre coordinates of site are; 19°30'15.66"S and 17°52'1.37"E



7. PROJECT ACTIVITIES AND THEIR PHASES

7.1. Activities during the construction phase

The construction of the production facility will consist in setting up a foundation to support the grinding machines. This will be done as per normal construction technique, as it does not require any special purpose engineering. In fact, it is a small scale project and as such, the construction would not be significant as compared to a multi complex building or mining facilities etc.

The key construction activities associated with the proposed project include:

- transportation of construction phase materials and staff (via existing roads);
- clearing of vegetation;
- site establishment including storm water controls;
- foundations and structures;
- equipment, pipework and utilities installations;
- collection, storage and removal of construction related waste

Activities are expected to take place 8 hours a day for seven days a week. During the construction phase, about 25 people will be employed to work on the construction of the plant. Construction facilities would be removed at the end of the construction phase (unless incorporated into the operational phase facilities when deemed necessary).

7.2. Activities during operational phase

The main activities of this project during operational phase would be the Irrigation, harvesting, milling, packaging and transportation of maize. However, the key operational activities associated with the proposed project include:

- arrival and departure of personnel (in shifts);
- delivery of raw materials and other supplies by truck and removal of waste by truck;
- storage of incoming materials;
- maize preparation, milling and refinery;
- final product and by-product storage and transportation;

- Associated services and support activities.

The main facilities would include:

- corn off-loading, cleaning and storage silos;
- steeping, milling and drying area;
- by-product load out area;
- refinery plant, tank farm and load out area;
- chemical intake and storage tanks;
- warehouses and spent carbon storage area;
- workshops and truck wash;

The plant would process a maximum of 11 tons per day. The maize will be dry cleaned in enclosed cleaning machineries to remove screenings. The cleaned maize will then be conditioned by the addition of water and let to lay for a period of time to make separation of outer covering easy and also reduce power used to grind. The grade of the flour will be fine flour and the flour will be stored in bulk bins ready for packing while the by-products will be turned into animal feed. The flour will be bagged in 10 – 20 kg bags. The packed flour will be stored in warehouse awaiting to be dispatched to suppliers like AMTA, ABC Milling or customers via the existing roads on trucks. During this phase, about 15 people will be employed to work on different sections of the operation.

8. ROLES AND RESPONSIBILITIES

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation and review of the EMP. The proponent in this report refers to the Irvington and its appointed contractors.

8.1. Competent Authority

The Department of Environmental Affairs: Ministry of Environment and Tourism is responsible for the review of the EMP documents it is the competent authority.

8.2. Irvington Irrigation projects (Proponent)

The role of the applicant is as follows:

Irvington Irrigation projects as it is the applicant/ proponent, should hire suitably qualified person(s) and assign them with the responsibility to ensure implementation of the EMP, and should:

- Know the contents and implications of the EIA and monitor the implementation of EIA findings using the EMP.
- Revise the EMP as required and inform the relevant parties of the changes.
- The applicant should Review report regarding the implementation of the EMP and make payments to the Contractor if the EMP is being implemented in a satisfactory manner.
- Give warnings and impose fines and penalties on the Contractor if the Contractor neglects to implement the EMP satisfactorily.
- Protect the environment and rehabilitate the environment as prescribed in the EIA.

8.3. Irvington Irrigation projects (Project Manager)

The proponent will appoint the Project Manager. The role of the project manager will be:

- Liaising directly with the relevant authorities with respect to the preparation and implementation of the EMP and meeting the conditions documented in the environmental clearance certificate.
- Bear the overall responsibility for managing the project contractors and ensuring that the environmental management requirements are met.
- Inform the contractors of the EMP and Environmental clearance certificate obligations.
- Approve all decisions regarding environmental procedures and protocols that must be followed.
- Have the authority to stop any construction in contravention with the EMP and RoD.

- Have the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP.
- Maintain open and direct lines of communication between the proponent, Contractor and Interested and Affected Parties (I&APs) with regards to environmental matters.
- Attend regular site meetings and inspections where required.

8.4. Construction Contractors

The construction contractor should appoint the Contractor's representative who is suitably qualified to implement the EMP. The responsibilities of the Contractor include:

- Compliance with the relevant legislation and the EMP.
- Preparation and submission to the proponent through Project Manager the following Management Plans prior to commencing work:
 - Environmental Awareness Training and Inductions;
 - Emergency Preparedness and Response;
 - Waste Management; and
 - Health and Safety.

9. Management of impacts

9.1. The Construction Phase

The impacts during this phase will have immediate effects (e.g. noise pollution, dust and health and safety). If the site is monitored on a continual basis during the construction phase, it is possible to identify and manage or mitigate these impacts as they occur.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Generation of waste	<p>The construction phase of the development is likely to generate waste from clearing of vegetation, builder's rubble, general construction refuse and minor hazardous waste including paint tins, cleaning acids, asphalt's and oils.</p> <p>The development could therefore impact on the environment by generating solid waste pollution.</p> <p>Littering</p>	<p>Ensure that no excavated soil, refuse or building rubble generated on site are placed or dumped on surrounding properties or land.</p> <p>The Contractor shall ensure that all litter is collected from the work and camp areas daily.</p> <p>No construction waste should enter the surrounding environment no cleared vegetation to be burnt on-site.</p> <p>Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts;</p>	Proponent	Waste management service provider and the proponent
Sewage		<p>Adequate sanitation facilities e.g. chemical toilets must be provided at the camp depot and construction site.</p> <p>Adequate sanitation facilities i.e. 15 employees</p>	Regular inspection. By Waste management service provider and the proponent	Waste management service provider and the proponent

		<p>per facility should be provided.</p> <p>The toilets should be located at least 50m from the construction site.</p> <p>They should be kept clean and hygienic regularly to ensure that they are usable.</p> <p>Effluent must not be discharged into natural environment and bush-toileting is prohibited.</p> <p>Letter of consent from a registered waste facility to allow contractor to empty the toilet facility at their sewer system should be provided.</p>		
Health and Safety-	<p>Health and Safety Regulations pertaining to personal protective clothing, first aid kits being available on site, warning signs, etc. is very important and should be adhered to.</p> <p>During construction phase, there is a possibility of injuries to occur if no measures are taken into consideration.</p>	<p>A health and safety plan is to be developed and implemented as soon as land clearing commences.</p> <p>Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction.</p> <p>The responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site.</p> <p>The contractor is further advised to ensure that adequate emergency</p>	<p>Security System Monitoring. Safety Procedures. First Aid Training by ECO.</p>	ECO./Proponent

		facilities, including first aid kits, are available on site.		
Heritage Impacts	These are archaeological finds, Graves, historical and cultural significance	<p>If during construction any possible finds are made (e.g. Pottery, bones, shells, ancient clothing or weapons, ancient cutlery, graves etc), it should be barricaded off and the operations must be stopped and the relevant authorities should be contacted immediately for the qualified archaeologist to come and do the assessment of the findings.</p> <p>Work may only commence once approval is given from the heritage agency.</p>	Contactor/ Project Manager	Contractor/Prop onent
Noise pollution	<p>Noise levels are expected to rise during the construction phase of the development.</p> <p>Construction activities that cause noise include vehicle trafficking, generator noise, pressure hammers and construction worker's voices, including earthmoving equipment which will be utilized during the construction phase.</p>	<p>Construction should be limited to normal working days and office hours from 08h00 to 17h00 and 7:30 – 13:00 on Saturdays.</p> <p>No construction activities may be undertaken on Sunday.</p> <p>Provide ear plugs and ear muffs to staff undertaking the noisy activity or working within close proximity thereof or alternatively, all construction workers should be equipped with ear protection equipment.</p>		Contractor / Proponent

		Noise pollution should be addressed and mitigated at an early stage of construction phase.		
Air Quality Impacts	<p>These are expected to be site specific and surrounding area, short-termed and will most probably pose a negligible nuisance and health threat to those residing nearby.</p> <p>The construction of the proposed facility will have impact on the surrounding air quality as construction vehicle will be frequenting the site and surrounding.</p>	<p>Dust may be generated during the construction/decommissioning phase and might be aggravated when strong winds occur therefore; dust suppression during the construction process is advised if dust becomes an issue.</p> <p>Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust.</p> <p>A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas.</p> <p>Loads could be covered to avoid loss of material in transport, especially if material is transported off site.</p>	Regular visual inspection by ECO	Project Manager
Employment Creation	Positive Impact	<p>Ensure gender equality is taken into consideration that both men and women are employed equally and treated equally.</p> <p>Preference should be given to local residence and to Namibian Citizens</p>	Contactor	Contactor

9.2. The Operational Phase

The potential environmental impacts emanating during the operational phase will be minimised. This, in turn, will minimise the risk and reduce the monitoring effort, but it does not make monitoring obsolete.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Solid wastes:	<p>The main wastes produced from the mill plant are organic matters such as maize residues from sieves i.e. impurities smaller or larger than grain and they cannot cause significant hazards to human health or the environment when properly managed.</p> <p>Some solid waste comes from the field in a way that the grains are received in the uncleaned state and contains a variety of different types and sizes of foreign material including grain bran, chaff, rust, and weed seeds, various types of pollens, different mold spores, and pieces of grain, dirt, and insect parts.</p>	<p>All by products produced by the Milling plant should be developed into animal feed</p> <p>Mixing biodegradable waste with the other waste for the production of high quality fertilizer.</p> <p>Artificial and non-biodegradable materials (metals, glasses, plastics, etc) should be collected in separate containers from the site and reused where possible or taken to approved landfill in the region.</p> <p>The contractor and developer should ensure that all the waste generated by the development is appropriately disposed of at the recommended waste disposal</p>	Project Manager	Proponent

		<p>sites close to the area.</p> <p>No on-site landfill (waste disposal) facilities.</p>		
Waste water:	<p>Normally water in flour production projects is used for watering (to reduce air emissions).</p> <p>Wastewater of the milling factory can cause a number of impacts ranging from a loss of aesthetics up to affecting health of the nearby households.</p>	<p>The treated waste water should be supplied to grow vegetables in the factory's compound.</p> <p>Waste water should be treated using a range of physical, chemical, and biological treatment technologies to manage waste water quality to acceptable levels.</p> <p>Waste water should not be discharged to the environment without any treatment</p> <p>To avoid contaminating the soil and underground ecosystem, no untreated wastewater should be disposed on soil.</p>	Regular inspection By Project Manager	Project Manager / Proponent
Air pollution	<p>Raw materials received in flour factory commonly contain much fine dust and long fiber shaped dust particles. The fine dust may include the actual soil in which the maize was grown, owing to wind or rain action in the field.</p> <p>Other fine particles may originate from weeds or insects or be produced from the grain itself by abrasion in handling and storing.</p>	<p>During the operational phase, the proposed mill will not utilise steam during the process and would not directly combust gas or any other fuels. Therefore, the potential emission source has been</p>	Regular visual inspection by operator, Project Manager	Proponent/ Project Manager

	<p>Particulate Matter or dust gets in to the environment during all processing stages starting with grain entering the elevator to its milling processes.</p> <p>PM is emitted into the air during pouring and packing processes.</p>	<p>considered negligible and excluded from the assessment.</p> <p>For human health and safety, all employees must wear their protective clothes (PPE) including face masks at all time.</p> <p>Fine particle size of the mill dust can be managed by the installation of air handling cloth type filters</p>		
Noise pollution	<p>Noise pollution is the exposure of people or animals to levels of sound that are annoying, stressful, or damaging to the ears.</p> <p>Since the industry is installed far from residential area noise problem is not an issue for the nearby residents.</p> <p>The noise is expected to be generated at the processing section, milling section and packaging section of the machines which will caused discomfort noise.</p> <p>The noise pollution will only disturb people working in the factory.</p>	<p>Provide ear plugs and ear muffs to staff undertaking the noisy activity or working within close proximity thereof or alternatively, all workers at operational section should be equipped with ear protection equipment and must be worn at all time.</p>	<p>Regular inspection. By Project Manager</p>	<p>Project Manager / Proponent</p>
Accidents	<p>Employer shall take the necessary measures to adequately safeguard the health and safety of the workers.</p>	<p>Workers should be provided with personal protective equipment such as high boots, protective uniform, dust masks, helmets and Eye goggles.</p> <p>Provide safety training awareness to train employees about the importance of safety equipment and do regular inspections to inspect the</p>	<p>Monitoring should be carried out on a regular basis, including injuries and major accidents and should be reported to Project Manager</p>	<p>Proponent</p>

		<p>implementation of PPE.</p> <p>Provide insurance services in case of accident to employees</p>		
Stimulation of Economic Development	<p>The development of the flour mill plant is expected to enhance the economic development of the surrounding area and boost the development confidence of the area.</p> <p>The project is to earn considerable profit for the proponent and also it increases revenue through tax</p> <p>It will also supply 11 tons of quality flour /day to its customers.</p>	<p>Flour should be packaged in quality environmental friendly bags.</p> <p>Employment should be given to people from Grootfontein district for them to boost the development of Grootfontein and for them to increase the value of their properties and to increase the value of their land.</p> <p>It is recommended to put local people at forefront when hiring or recruiting people, therefore unskilled people from the local community should be employed and semi-skilled from the region so that unskilled workers can be trained by semi-skilled for them to learn and be able to compete with others in future.</p>	Proponent	Proponent

10. Environmental Monitoring Plan

Environmental monitoring plan is part of the EMP performance assessment and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of monitoring performances against the objectives and documenting all environmental activities is part of internal and external auditing. In this project, this will be coordinated by the Project Manager of this project / External

Consultant. The tables below outlines the type of information that shall need to be recorded on a regular basis by the appointed Project Manager as part of the monitoring process of the activities and the effects.

Table: Monitoring of environmental awareness training.

Mitigation	Compliance	Follow-up action required	By whom	By When	Completed
Is there an Environmental awareness training programme?					
How many people have been given environmental awareness training?					
Is a copy of the EMP on site?					
How effective is the awareness training?					
Do people understand the contents of the EMP?					
If not, where are the weaknesses?					
Ask 3 people at random various					

questions about the EMP.					
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11. Conclusion

The above Environmental Management Plan, if properly implemented, will help to minimise adverse impacts on the environment. Provided this project is mitigated, as per the EMP, the project will result in limited negative environmental impacts that can be mitigated through implementation of this EMP. It is the applicant's responsibility to ensure that this EMP is made binding on the construction contractor by including the EMP in the contract documentation. The contractor should thoroughly familiarise themselves with the requirements of the EMP and appoint the qualified person to oversee the implementation of the EMP on a day-to-day basis. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.