

# ENVIRONMENTAL MANAGEMENT PLAN (EMP)

# ACTIVITIES ASSOCIATED WITH GALORE TRADING'S PROPOSED HORTICULTURE IRRIGATION PROJECT, LOCATED ±2 KM NORTHEAST OF ORANJEMUND TOWN, KARAS REGION, NAMIBIA.

OCTOBER 2022

## EXPERTISE AND DECLARATION OF INDEPENDENCE

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Galore Trading cc to undertake the environmental impact assessment process.

Immanuel N. Katali, the EIA Lead Practitioner holds a B.Arts (Honors) in Geography, Environmental Studies and Sociology and has over 6 years of experience in conducting EIAs in Namibia.

The consultant herewith declare that this report represents an independent, objective assessment of the environmental impacts and its mitigation measures associated with the activities and potential impacts of the proposed horticulture project.





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## LIST OF ACRONYMS, ABBREVIATIONS AND UNITS



DEA	Department of Environmental Affairs
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
I.N.K	I.N.K Enviro Consultants cc
M <sup>2</sup>	Meter Squares
MET	Ministry of Environment and Tourism



## **1** INTRODUCTION

## 1.1 Introduction to the Proposed Project

Galore Trading cc (hereinafter referred to as Galore), intends to construct and operate a horticulture irrigation project, located ±2 km southeast of Oranjemund, on two bordering agricultural plots, made available by the Oranjemund Town Council and measuring a total of 64 hectares (ha) (Figure 1). The project aims to produce fruits and vegetables (onion, tomato, green pepper, carrot, pumpkins and cabbage) in the early stages and expand to various other crops in the future, pending further suitability investigations.

The water for the irrigation project is proposed to be abstracted from the Orange River (located ±1 km east of the project site) to the irrigation site via underground pipeline and with the use booster pumps near the river. Bulk irrigation water will be piped from the river to a series of booster pump stations located on the project area to supply the various irrigation systems. The irrigation project aims to abstract water from the Orange River of approximately 1.2 million m<sup>3</sup>/annum. A water abstraction permit will be submitted to the Department of Water Affairs.

This proposed project follows the footsteps of the Government of Namibia's aims and objectives to ensure agriculture productivity and food security as part of the Green Scheme Policy, "to maximise irrigation opportunities for agriculture productivity and social development around wetlands" and in line with Vision 2030 strategy.

Prior to commencement of any construction activities of the proposed project, an Environmental Clearance Certificate (ECC) is required on the basis of an approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). It is with this background that, I.N.K Enviro Consultants cc (I.N.K) an independent firm of consultants, was appointed to undertake the Environmental Impact Assessment process for this project. More details regarding the EIA process that was followed are presented in Section 1.4.



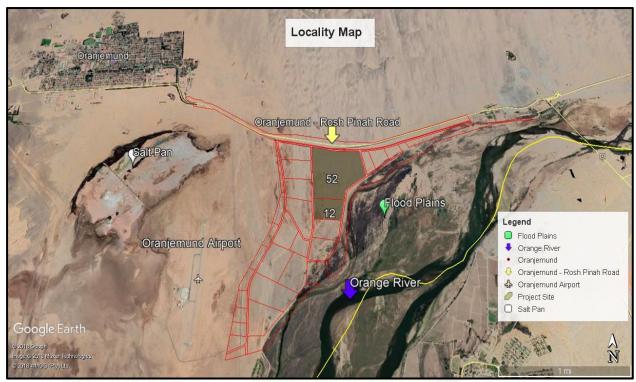


Figure 1: Location of the Proposed Horticulture Irrigation Project

The //Karas Region is in south-western Namibia and is known for agricultural, mining and tourism activities as the main economic drive. The proposed horticulture project is located adjacent to the Transboundary Water Resources (Orange River), currently shared by four individual countries (for their own water resources within their counties). The four countries referred to herein are; Namibia, South Africa, Lesotho and Botswana. This site is located in an area known as the Orange River Mouth Ramsar Site. These are sites selected worldwide to help protect wetlands of international importance.

## 1.2 Details of the persons who compiled this EMP

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Galore Trading cc to compile the EMP.

Immanuel N. Katali, the EIA project manager and lead practitioner holds a B.Arts (Honours) Degree in Geography, Environmental Studies and Sociology and has over six years of relevant experience in conducting/managing EIAs, compiling EMPs and Socio-Economic Studies. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

## 1.3 Scope of Emp

The components of the EMP are included in Table 1: Content of the EMP below.



#### Table 1: Content of the EMP

EIA Regulation requirement	EMP Reference
Details of the persons who prepared the EMP and the expertise of those persons to prepare an environmental management plan.	Section 1.2
Information on any proposed management or mitigation measures to address the environmental impacts that have been identified in a report contemplated by these regulations, including environmental impacts or objectives in respect of –	Section 3
Planning and design	
Construction activities	
Operation or undertaking of the activity	
Rehabilitation of the environment	
An identification of the persons to be responsible for the implementation of the mitigation measures.	Sections 4
Proposed mechanisms for monitoring compliance with the EMP and reporting on it.	Section 4 & 5



## 2 LEGAL FRAMEWORK

The Republic of Namibia has five tiers of law and several policies relevant to environmental assessment and protection, which includes:

- The Constitution
- Statutory law
- Common law
- Customary law
- International law

Key policies currently in force include:

- The EIA Policy (1995).
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

## 2.1 Applicable Laws and Policies

In the context of the proposed irrigation project, there are several laws and policies currently applicable. They are reflected in Table 1 below.



## **Table 2: RELEVANT LEGISLATION AND POLICIES**

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non- hazardous & hazardous	Emissions to water (industrial & domestic)	Noise	Visual	Impact on Land use	Impact on biodiversity	Impact on Archaeology	Socio- economic	Safety & Health
1990	The Constitution of the Republic of Namibia of 1990	x	x	x	x	X	X	x	x	X	X	x
1997	Namibian Water Corporation Act, 12 of 1997	x									x	
2001	The Forestry Act 12 of 2001	x						x	х			
2013	Water Resources Management Act 11 of 2013	x			x						x	
2004	National Heritage Act <del>27 of 2004</del>									x		×



2007	Environmental	х	V	V	v	х	х	v	v	х	х	V
2007	Management,	X	х	х	Х	X	X	Х	х	X	X	Х
	Act 7 of 2007											
2012	Regulations											
	promulgated											
	in terms of											
	the											
	Environmental											
	Management,											
	Act 7 of 2007											
1975	Nature	х			Х				Х	Х		
	Conservation											
	Ordinance 14											
	of 1975											
1976	Atmospheric		Х									
	Pollution											
	Prevention Ordinance 11											
	of 1976											
1995	Namibia's	х	x	х	х	х	X	Х	х	х		х
1995	Environmental	^	^	^	^	^	^	^	~	^		^
	Assessment											
	Policy for											
	Sustainable											
	Development											
	and											
	Environmental											



	Conservation	
2008	Green Scheme	х
	Policy	
1995	National	Х
	Agricultural	
	Policy	
2003	Agricultural	Х
	(Commercial)	
	Land Reform	
	Amendment	
	Act	



## **3** ENVIRONMENTAL ACTION PLANS

The management measures proposed to mitigate the potential impacts relating to the construction and operation phase are detailed in the action plans below.

Issue	Management & Mitigation Measures
A	pplicable to both Construction and Operations phases
Understanding who the stakeholders are	Maintain and update the Galore Irrigation Project stakeholder register. Ensure that all relevant stakeholder groups are included.
	A representative database would include government, employees, service providers, contractors, farmers, local communities (specifically the residents of the town of Oranjemund, NGOs, shareholders, customers, the investment sector, community-based organisations, suppliers and the media.
	If relevant, include marginalised and vulnerable groups in the stakeholder communication process.
	Record partnerships with local suppliers and investors as well as their roles, responsibilities, capacity and contribution to development.
Liaison with interested and affected parties	Devise and implement a stakeholder communication and engagement strategy. Quarterly meetings with the immediate neighbouring communities will be carried out.
Cooperative working relationship with stakeholders	Keep identified stakeholders informed about the irrigation scheme's activities.
	Use appropriate communication channels to consult with, and disseminate information to, the identified stakeholder groups.
Managing perceptions, issues and/or complaints	Develop and implement a concerns/complaints (grievance) process for stakeholders and publicise the channels through which issues can be submitted to Galore.
	Document all complaints in an external communications register;
	Respond immediately to acknowledge receipt of complaints and comments;
	Investigate and report on findings of issue to the complainant;
	Keep complete auditable records of complaints, responses and actions taken; and
	Introduce an independent mediator if the grievance / complaint cannot be resolved between Galore and the affected party.
	Construction Phase
Air quality/Dust	Demarcate/fence off construction activities. No staff or vehicles to be permitted outside of these demarcated areas.
	Keep construction footprint to a minimum.
·	1



	Ensure all construction equipment is subject to an Inspection & Maintenance programme to ensure proper combustion.
	Should dust be generated by construction activities or due to cleared land then dust suppression will be carried out.
Noise	Restrict construction activities to daylight hours.
	Refer to operations phase for general noise management measures.
Waste Management	Refer to operations phase for general waste handling and management requirements.
	Hazardous waste (including hydrocarbons, chemical bags and containers and contaminated material/soil) will be disposed of at a licensed hazardous waste disposal facility n Windhoek or Walvisbay.
	Hydrocarbon and chemical contaminated materials (soils, rags, containers, filters etc.) are considered hazardous waste and will be handled and disposed of accordingly.
	Ablution Facilities with septic tanks should be made available during construction. Personne
	may not relieve themselves in the area.
Visual	No litter or waste accumulation will be permitted on site.
	Clear demarcates sites and signage to ensure adequate waste management response and safety within the project site.
Biodiversity	Environmental awareness for all employees to be included during inductions. Regular awareness training will be carried out
	The footprint of the area will be minimised as far as is practically possible.
	Management will implement a zero tolerance policy concerning the killing or collecting of an plants or animals. This applies to people directly employed by Namibia Berries as well as an contractors working on their behalf. Develop a policy that limits independent movements of a workers into the veld that could create suspicion of poaching. Strictly prevent poaching harvesting or possession of any such wildlife resources without an appropriate permit.
	Keep removal of protected tree species to a minimum.
	Optimise the total size of the irrigation area by carefully considering the realistic productive capacity of the soils (use only the area that is needed to produce the target production).
	Do not clear one contiguous block of vegetation; rather follow the principle of patch dynamics and clear multiple smaller blocks, each divided from the next by a patch of natural bush.
Heritage/Archaeology	In the event that archaeological resources are discovered during construction, a chance find emergency procedure will be implemented which includes the following:
	o All work at the find will be stopped to prevent damage;
	o An appropriate heritage specialist will be appointed to assess the find and related impacts; and
	o Permitting applications will be made to the necessary authorities, if required.
Health and Safety	Suitable First Aid equipment must be provided for use by qualified first aid personnel.



	Suitable shaded facilities must be provided for employees to use during breaks.
	Clean drinking water must be provided in sufficient quantities at all times.
	Heat stress awareness training must be provided.
	A register must be kept of hazardous substances to be used on site and will include insecticides, hydrocarbon fuels etc.
	Material Safety Data sheets for all chemical substances must be provided and employees must receive training in terms of the safe handling, transport and use thereof.
	An effective emergency response procedure must be in place to be initiated by competent personnel.
	Operations phase
Air quality	Develop and implement a complaints register to record any 3rd party complaints relating to the release of dust from exposed areas. Complaints must be investigated and actions developed.
	Do not disk when average wind speeds exceed 24 km/h.
	Cover piles of fertilizer, compost, or soil.
	Minimize soil-disturbing field operations
	Modify the timing and type of operations based on weather conditions.
	Use cover crops like grasses and legumes where possible to help reduce wind erosion.
	Pay attention to the dust created: use water or dust suppressants when substantial dust is blowing offsite.
Noise	General construction and operational activities, following good engineering practice should be applied including:
	<ul> <li>Regular maintenance of all diesel-powered equipment.</li> </ul>
	<ul> <li>Enclosure of major sources of noise.</li> </ul>
	<ul> <li>Following of good design philosophies for vibrating structures that are known to be noisy.</li> </ul>
	Noise-generating activities limited to daytime hours since noise impacts are most significant during the night.
	Minimise individual vehicle engine, transmission and body noise or vibration through the implementation of an equipment maintenance programme and minimise the need for trucks or equipment to reverse.
Soils and Groundwater Contamination	Soil probes will be utilised to measure soil moisture content and prevent over-irrigation.
	Monitor groundwater levels.
	Select chemicals with low toxicity outside target groups (i.e. highly specific), short half-lives and high levels of adsorption (this will prevent leaching);
	Given that most of the chemicals will be applied through the irrigation system, using an optimal water management approach based on measured soil moisture levels will also mean that



	leaching and runoff will be limited.
	Apply water efficient irrigation methods and control of volumes of water used for irrigation.
	Have proper storage of chemicals and fertilisers on site in order to prevent spillages and associated soil and groundwater contamination.
	Comply with EURO GAP standards
	Plant crops that are adapted to the climate and that don't require excessive volumes of pesticides and fertilizers.
	Maintain equipment to prevent leakages of contaminants.
	Dispose of materials properly at a suitable disposal site.
	Implement a groundwater quality monitoring programme at the irrigation site and in areas where groundwater is used downstream, e.g. in production boreholes of communities near the irrigation project.
Surface water	A permit will be obtained from the Department of Water Affairs (Ministry of Agriculture, Water and Land reform) and company shall ensure compliance to all applicable recommendations. All records shall be kept in safe storage on site physically and digitally.
	Minimise the project footprint as far as possible.
	If necessary, implement stormwater control measures that prevent water from pooling on site.
	Maintain natural water channels (particularly thedrainage lines)
	Storm water management, construction of infrastructure to contain contact and waters.
	Effective site supervision to ensure no blocking of stormwater infrastructure and efficient storage of contact water.
	Use GAP internationally approved bio-degradable and/or environmentally friendly products.
Water Abstraction	The abstraction of water should be controlled by Regulation (water abstraction and use permit). The regulation requires Water Authorities to: set objectives (abstraction targets), monitor and enforce compliance. Therefore, upon determining the actual water volumes required per year, Galore should apply for and obtain a water abstraction and use permit from the Department of Water Affairs at Ministry of Agriculture, Water and Land Reform. Upon issuance of the permit, it will be very crucial that Galore strictly adheres to the abstraction volumes given in its permit and if necessary use less water than the allocated volume in the water permit.
	Upon issuance of the water use permit, an annual report including water flow and returns should be prepared and submitted to the responsible unit of the Department of Water Affairs at MAWLR. This is used to monitor water use by the project and ensure that the Proponent is adhering to allocated water abstraction volumes.
	As an emphasis to the preceding point, annual reporting will demonstrate commitment from the Proponent, compliance and enables regulatory authorities to make informed decisions that minimise environmental impacts to groundwater and dependent ecological systems.
	Reduction of over irrigated areas. Irrigation should be restricted to actual field footprints only, i.e. watering / irrigation should only be done on water sections of the fields that really require it



	(water).
	Consider the application / utilisation of water efficient irrigation methods.
	Project workers should be trained on water resources management, quality and conservation awareness
	Voluntary reduction in water use by users. The applicant should, if approved stick to the required and allocated volume of water and try by all means to use water efficiently and reuse, where necessary.
	Regular review of an existing abstraction management plan to ensure that it can adapt to changing circumstances (given Namibia's ever changing climate) and publicly reporting on the plan's implementation.
	Water recycling where possible should be encouraged to minimise waste.
Surface water abstraction	The neighbouring country Department of Water Affairs and Forestry equivalents will be notified of the proposed abstraction volumes prior to project implementation. Proof of these notifications will be kept.
Biodiversity	Environmental awareness for all employees to be included during inductions. Regular awareness training will be carried out.
	Galore will implement a zero-tolerance policy with regards to the killing or collecting of any biodiversity. This applies to people directly employed by Galore as well as any contractors working on its behalf.
	Due to the presence of Baboons and other wild animals in the area, Galore is required to install a baboon-proof fence around the site which will prevent and manage baboons and other wild animals from having access to the irrigation site and crops.
	Monitor the occurrence of tracks of animals around the boundary fence, with particular attention being paid to evidence of the interruption of linear movements.
	The irrigation should make use of net structures which will manage and control birds from having access and coming into direct contact with the crops on site.
	Follow international standards of best practice in the use of pesticides, fungicides and herbicides in agriculture (e.g. http://www.ext.colostate.edu/pubs/crops/xcm177.pdf). This will include:
	<ul> <li>Select chemicals with low toxicity outside target groups (i.e. highly specific), short half-lives and high levels of adsorption (this will prevent leaching);</li> </ul>
	Use optimal, not maximal doses;
	<ul> <li>Apply for as short periods as possible and select days that are not windy;</li> </ul>
	• Ensure that there is no overspray that drifts into the adjacent indigenous habitats or into areas of human habitation;
	Confirm the ecotoxicity of each chemical using an independent database such as the Pesticide Action Network (PAN) Pesticide Database
	All handling of fertilizers and chemicals will be done in accordance with EURO GAP.
	Integrated pest management (IPM) is the control strategy of choice. IPM is an approach to



	<ul> <li>pest management that blends all available management techniques - nonchemical and chemical - into one strategy: Monitor pest problems, use nonchemical pest control, and resort to pesticides only when pest damage exceeds an economic or aesthetic threshold.</li> <li>The commitment to best environmental practice in the use of chemicals in agriculture should be an explicit statement in the company's higher-level commitments.</li> <li>Staff that administer the chemicals, or have to decide on application protocols or changes in cocktails should only be allowed to do so if they have received training in the management of chemicals and in their different environmental toxicities.</li> <li>Follow international best environmental practice in the application of all fertilisers. This should include:</li> <li>Base dosage rates of N and P on their soil levels – high levels in the soil should be a trigger to scale back on application;</li> <li>Use forms of fertiliser that are readily and quickly taken up by plants.</li> </ul>
Waste and Sewerage Management	Ensure proper removal of general waste from site and disposal at licensed disposal site. Obtain records of safe disposal. Hazardous waste will be separated from non-hazardous waste and will be stored and
	disposed of separately.
	Recycling will be promoted on site.
	Bins with labels according to waste type, and with lids in order to prevent wind-blown litter, will be provided at strategic locations through the site and will be emptied regularly in order to ensure no overflows.
	No litter will be permitted on site.
	No waste will be disposed of on site. Waste will be transferred to the nearest approved landfill site.
	Hydrocarbon contaminated materials (soils, rags, containers, filters etc.) are considered hazardous waste and will be handled and disposed of accordingly.
	Hazardous waste (including hydrocarbon contaminated material/soil) will be disposed of at a licenced hazardous waste disposal facility.
	Sewerage from ablution facilities in training academy and nurseries should be installed with septic tanks connected to french drains and to Oranjemund's sewerage system.
Visual	Carry out regular maintenance in order to maintain visual integrity of the site.
	No litter or waste accumulation will be permitted on site.
	Ensure immediate clean-up of all spills/leakages
Social and Economic	Local people must be preferentially selected for training academy to encourage social growth and development.
	Management should work closely with the Oranjemund Town Council to manage in-migration, and the effects thereof.
	Galore should fence the entire irrigation site.



	The entrance gates will be locked and controlled by security personnel.
	All persons entering and exiting will be recorded.
	Galore should employ security personnel to work on rotation, 24 hours per day.
	Operate and publicise among all site workers and visitors a detailed safety and security plan for the project.
EMP implementation	A person must be appointed to be responsible for environmental management and compliance.
	All staff must be made aware of, and familiar with, site operations during operations, the key environmental issues and consequences of non-compliance to the EMP.
	All personnel must undergo induction on environmental issues and EMP specifications. The induction must include awareness of activities and issues. Emergency procedures also need to be included in the training
	Ensure ongoing awareness and compliance.



## 4 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

This section describes the roles and responsibilities for implementing the different parts of the environmental management plan (EMP).

#### 4.1 Supervisor

The Supervisor has overall responsibility for environmental management and safety during the operation process and shall oversee the implementation of the EMP.

The Supervisor's responsibilities relating to compliance with this EMP:

- Regular inspections of compliance to this EMP and any other relevant legal requirements.
- Regular correspondence with the DEA on environmental issues and incidents.
- Conduct environmental awareness training during induction training and on an ad hoc basis thereafter to all workers.
- Ensure compliance to all rules
- Ensure that staff is controlled through the implementation of appropriate security measures.
- Carefully manage the handling of hydrocarbons and other hazardous materials.
- Monitor for excessive dust and noise levels and implement control measures if necessary.
- Report incidences to the DEA.
- Implement a waste management strategy.
- Monitoring and maintenance of equipment and machinery.
- Implement an environmental awareness plan.
- Implementation of first-aid procedures.

#### 5 TRAINING AND AWARENESS

The purpose of the job specific environmental awareness training is to ensure that employees/all staff are equipped to implement the actions committed to in the EMP. The staff involved in operations will receive training regarding the requirements of this EMP.

Four main forms of training will be provided on the premises:

- Site induction
- Environmental management training general and targeted

The training will generally be prepared by the Supervisor (or the Environmental Representative).



The following will be done to ensure all employees, contractors, suppliers and visitors receive the appropriate training/awareness:

## 5.1 Environmental Site Induction

All new members of staff receive a corporate Environmental Induction along with the obligatory Health & Safety induction. The induction gives a general overview of the environmental challenges faced by the project, how we are managing them, and general tips for reducing our impact in the workplace.

The main reason for environmental induction is to encourage new staff to be environmentally aware right from the beginning of their employment. This will ensure that environmental initiatives are successful by eliminating bad habits from the start.

Before working on site, all personnel and sub-contractors will undertake a site induction incorporating environmental requirements. The induction will address a range of environmental awareness issues specific to the construction process of the project.

As a minimum, training shall include:

- Explanation on the importance of complying with the EMP and environmental implications should the EMP not be effectively implemented.
- Explanation of the site rules.
- Discussion of the potential environmental impacts of activities, recognition of environmental risks and how to control these risks.
- The benefits of improved personal performance, understanding of what to do in case of an environmental event or exposure.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out operational activities.
- Explanation of the requirements of the EMP and its specification.
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP.

## 5.2 Environmental Awareness training

Targeted environmental management training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact. This environmental training will aim to achieve a level of



awareness and competence appropriate to their assigned activities. This training will take place at the beginning of operations.





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