

Environmental Management Plan

**PROPOSED CONSTRUCTION OF OTJIWARONGO
MULTIPURPOSE MARKET AND TAXI RANK ON ERVEN 1756
AND 1757 OTJIWARONGO, OTJOZONDJUPA REGION**

PROJECT DETAILS

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ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
DR	Developer’s Representative
EA	Environmental Assessment
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GG	Government Gazette
GIS	Geographic Information System
GN	Government Notice
GPS	Global Positioning System
HIV	Human Immuno-deficiency Virus
I&APs	Interested and Affected Parties

NHC	National Heritage Council
Reg.	Regulation
S	Section
TB	Tuberculosis

1 INTRODUCTION

Otjiwarongo is strategically located as a gateway to various parts of the country in all compass directions. Whether it is to from the coast on your way to the north, or from and to the north east you will find it convenient to pass or stop by in Otjiwarongo. It is an attraction in its own right to the visitors and tourists on the way to the more renowned tourist destinations in the vicinity. It is approximately 250km north of the capital city, Windhoek and is the regional capital of Otjozondjupa Region. The town also serves as a business and shopping hub for the smaller surrounding towns and farming community.

Otjiwarongo is continuously improving access to amenities in line with its growth strategy, this is always done in a sustainable manner. To this end the Municipality intends to develop a multipurpose market on Erven 1756 and 1757 Otjiwarongo (See Figure 1 below) that will augment the link between Orwetoveni residential suburb and the Town Centre. The multipurpose market will consist of the following amenities: an open market, a taxi rank, an open museum and a theatre. Elements form both areas will be combined to meet the needs of the primary end users, that is the residents of Otjiwarongo in particular, and which benefits will flow over to the visitors and tourists passing through the town. The design considerations will look into the aspects of: health and wellbeing, construction material usage, energy, and environmentally friendly design concepts.

The proponent, through the Jack Mutua Architects Inc. consortium, appointed Environam Consultants Trading cc (ECT) to undertake the Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the activities from the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA).

The process will be undertaken in terms of the gazetted Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA Regulations) of the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA). The EA process will investigate if there are any potential significant bio-physical and socio-economic impacts associated with the proposed development and related infrastructure and services.

The EIA process also provides an opportunity for the public and key stakeholders to submit comments and participate in the process, it will also serve the purpose of informing the proponent's decision-making as well as that of the Ministry of Environment, Forestry and Tourism.

An EMP is one of the most important outputs of the EIA process as it synthesises all of the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. This EMP details the mitigation and monitoring actions to be implemented during the following phases of this development:

- Planning and Design - the period, prior to construction, during which preliminary legislative and administrative arrangements, necessary for the preparation of the land, are made and engineering designs are carried out. The preparation of construction tender documents forms part of this phase;
- Construction - the period during which the proponent, having dealt with the necessary legislative and administrative arrangements, appoints a contractor for the construction of services infrastructure, buildings as well as any other construction process(s) within the development areas;
- Operation and Maintenance - the period during which the development will be fully functional, operational and maintained.

2 ROLES AND RESPONSIBILITIES

The Municipality of Otjiwarongo, (the Developer) is ultimately responsible for the implementation of the EMP, from the planning and design phase to the decommissioning phase of this development, if the development is in future decommissioned. The developer will delegate this responsibility as the project progresses through its life cycle. The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals:

- Developer's Representative;
- Environmental Control Officer; and
- Contractor (Construction and Operations and Maintenance).

2.1 DEVELOPER'S REPRESENTATIVE

The Developer should assign the responsibility of managing all aspects of this development for all development phases (including all contracts for work outsourced) to a designated member of staff, referred to in this EMP as the Developer's Representative (DR). The Developer may decide to assign this role to one person for the full duration of the development, or may assign a different DR to each of the development phases - i.e., one for the planning and design phase, one for the construction phase and one for the operation and maintenance phase. The DR's responsibilities are depicted in **Table 2-1** as follows:

Table 2-1: DR's responsibilities

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in Table 4-1 are obtained/adhered to.	Throughout the lifecycle of this development
Making sure that the relevant provisions detailed in Table 5-1 are addressed during planning and design phase.	Planning and design phase
Suspending/evicting individuals and/or equipment not complying with the EMP	<ul style="list-style-type: none"> • Construction • Operation and maintenance
Issuing fines for contravening EMP provisions	<ul style="list-style-type: none"> • Construction • Operation and maintenance

2.2 ENVIRONMENTAL CONTROL OFFICER

The DR should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the construction and operation and maintenance phases to a designated member of staff, referred to in this EMP as the Environmental Control Officer (ECO). The DR/Developer may decide to assign this role to one person for both phases, or may assign a different ECO for each phase. During the operation phase the Developer may outsource the monitoring and evaluation of the EMP to an independent Environmental Consultancy. The ECO will have the following responsibilities during the construction and operation and maintenance phases of this development:

- Management and facilitation of communication between the Developer, DR, the contractors, and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is bi-monthly) of all construction and/or infrastructure maintenance areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the DR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the DR with respect to the issuing of fines for contraventions of the EMP; and

- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

2.3 CONTRACTOR

Contractors appointed by the Developer are automatically responsible for implementing all provisions contained within the relevant chapters of this EMP. Contractors will be responsible for the implementation of this EMP applicable to any work outsourced to subcontractors. **Table 5-2** applies to contractors appointed during the construction phase and **Table 5-3** to those appointed during the operation and maintenance phase. In order to ensure effective environmental management, the aforementioned chapters should be included in the applicable contracts for outsourced construction, operation and maintenance work.

The tables in **Chapter 5** detail the management measures associated with the roles and responsibilities that have been laid out in this chapter.

3 ASSUMPTIONS AND LIMITATIONS

This EMP has been drafted based on the scoping-level Environmental Assessment (EA) conducted for the proposed multipurpose market as represented by the developer. ECT will not be held responsible for the potential consequences that may result from any alterations to the initial layout.

It is assumed that construction labourers will be sourced mostly from the Otjiwarongo Constituency area and that migrant labourers (if applicable) will be housed within the Otjiwarongo Constituency area.

4 APPLICABLE LEGISLATION

Legal provisions that have relevance to various aspects of this development are listed in **Table 4-1** below. The legal instrument and applicable corresponding provisions are provided.

Table 4-1: Legal provisions relevant to this development

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and	Sustainable development should be at the forefront of this development.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	<p>character of Namibia.”</p> <p>Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources.</p>	
<p>Environmental Management Act No. 7 of 2007 (EMA)</p>	<p>Section 2 outlines the objective of the Act and the means to achieve that.</p> <p>Section 3 details the principle of Environmental Management.</p>	<p>The development should be carried out in conformity to the EMA.</p>
<p>EIA Regulations GN 28, 29, and 30 of EMA (2012)</p>	<p>GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate.</p> <p>GN 30 provides the regulations governing the environmental assessment (EA) process.</p>	<p>Activity 9.2 Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.</p> <p>Activity 11.2 Construction</p>

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		of cemeteries, camping, leisure and recreational sites.
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The project should consider the impact it will have on the biodiversity of the area.
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008)	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the development does not lead to the degradation of the natural beauty of the area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during construction and operation of the development.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
<p>The Ministry of Environment, Forestry and Tourism (MEFT) Policy on HIV & AIDS</p>	<p>MEFT has developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.</p>	<p>The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when construction workers interact with local communities.</p>
<p>Otjiwarongo Town Planning Scheme</p>	<p>The Otjiwarongo Town Planning Scheme is a legal document that coordinates development in the town boundaries.</p>	<p>The provisions of the Town Planning Scheme should be adhered to.</p>
<p>Labour Act no 11 of 2007</p>	<p>Chapter 2 details the fundamental rights and protections.</p> <p>Chapter 3 deals with the basic conditions of employment.</p>	<p>Given the employment opportunities presented by the development, compliance with the labour law is essential.</p>
<p>Public Health Act no 36 of 1919</p>	<p>Section 119 prohibits persons from causing nuisance.</p>	<p>Owner, contractors and employees have to comply with these legal requirements.</p>
<p>Nature Conservation Ordinance no 4 of 1975</p>	<p>Chapter 6 provides for legislation regarding the protection of indigenous plants</p>	<p>Indigenous and protected plants have to be managed within the legal confines.</p>

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Atmospheric Pollution Prevention Ordinance (No. 11 of 1976).	The Ordinance objective is to provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto.	All activities on the site will have to take due consideration of the provisions of this legislation.
Roads Ordinance 17 of 1972	This Ordinance consolidates the laws relating to roads.	The provisions of this legislation have to be taken into consideration in as far as access to the development site is concerned.

5 MANAGEMENT ACTIONS

The aim of the management actions in this chapter of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce them.

The following tables provide the management actions recommended to manage the potential impacts rated in the scoping-level EA conducted for this development. These management actions have been organised temporally according to project phase:

- Planning and design phase management actions (**Table 5-1**);
- Construction phase management actions (**Table 5-2**);
- Operation and maintenance phase management actions (**Table 5-3**);

The responsible persons at the Developer’s team have assessed these commitments in detail and have committed to the specific management actions where indicated in the tables below.

5.1 PLANNING AND DESIGN PHASE

The DR should ensure that the management actions detailed below in **Table 5-1** should be adhered to during the period before the construction of the infrastructure starts.

Table 5-1: Planning and design management actions

PLANNING AND DESIGN PHASE IMPACTS	
Impact	Mitigation Measures
Surface and ground water	<ul style="list-style-type: none"> • Ensure that the infrastructure (water, sewer, stormwater) is regularly inspected and maintained to ensure it doesn't fail. • No dumping of waste products of any kind in or in close proximity to surface water bodies. • Ensure that the sewerage system is properly functional at all times and no waste flows into the environment. • A regular and planned maintenance program for the bulk infrastructure services should be put in place. • Re-use of treated waste water should be considered wherever possible. • Disposal of waste from the site should be properly managed and taken to the Otjiwarongo landfill site. • Washing of vehicles and equipment should not be allowed on site. Should it be necessary to wash vehicles and equipment this should be done at an area properly suited and prepared to receive and contain polluted waters.
Fauna and flora	<ul style="list-style-type: none"> • Adapt the proposed development to the local environment - e.g., small adjustments to the site layout to avoid potential features such as existing vegetation, etc. • Preserve the large <i>Acacia</i> trees found on site. Incorporate them in the design of the infrastructure. • Plant local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species. • Prevent the introduction of potentially invasive alien ornamental plant species such as; Lantana, Opuntia, Prosopis, Tecoma, etc.; as part of the landscaping as these species could infestate the area further over time. • Maintain control on movement of personnel. • Provide training to personnel on importance of protecting fauna and flora. • Prevent the collecting of wood, veld food, hunting etc.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	Mitigation Measures
Infrastructure	<ul style="list-style-type: none"> • Appoint professional engineers to design a detailed stormwater management system and supervise the construction thereof as part of the infrastructure service provision of the development. • Adapt the designs of the structures to avoid inundated sections. • The designs should take the natural drainage features that runs across the centre of Erf 1757 in a south-westerly direction where it joins a larger one running on the eastern boundary of Erven 1757 and 1756 in a northerly direction into consideration and ensure that no structures are to be sited such that they impede the natural flow of water. • Regular maintenance should also be carried out to ensure that the pathways are not clogged up by vegetation growth and solid waste. • It is recommended that alternative and renewable source of energy be explored and introduced into the proposed development to reduce dependency on the grid. • Solar geysers and panels should be introduced to provide for general lighting and heating of water and buildings. • Other ‘green’ technologies to reduce the proposed development’s dependency on fossil fuel should be explored where possible. • Designs and building materials should be as such to reduce dependency on artificial heating and cooling in order to limit the overall energy necessities. • Water saving mechanisms should be incorporated within the proposed development’s design and plans in order to further reduce water demand. • Re-use of treated waste water should be considered wherever possible to reduce the consumption of potable water. • Adhere to water quality guidelines in terms of The Water Act, 1956.
Access Road	<ul style="list-style-type: none"> • Ensure access to the site does not impede normal traffic flow along Henk Willems Street and surrounds.
Traffic	<ul style="list-style-type: none"> • Provide adequate parking space on site. • Ensure that road junctions have good sightlines. • Adhere to the speed limit. • Implement traffic control measures where necessary.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	Mitigation Measures
Social	<ul style="list-style-type: none"> • Ensure surface used by vehicles in and around the development area are paved. • Provide adequate refuse bins for disposal of waste by users. • Stringent control measures should be put in place to manage and control additional service providers such as vendors and car cleaners. • No detergents or waste water from these activities should be allowed to go into the drainage system. • Control the usage of fences as objects for hanging wet and heavy car floor rubbers or any unwanted materials. • Users should take care not to obstruct entrances to the neighbouring properties. • The proponent should consider hiring and official or security company to ensure order at all times at these facilities.

5.2 CONSTRUCTION PHASE

The management actions listed in **Table 5-2** apply during the construction phase. This table may be used as a guide when developing EMPs for other construction activities within this development area.

Table 5-2: Construction phase management actions

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
Fauna and flora	<ul style="list-style-type: none"> • Adapt the proposed developments to the local environment - e.g., small adjustments to the site layout could avoid potential features such as water bodies, vegetation, etc. all of which may serve as habitat to a myriad of vertebrate fauna. • Prevent the destruction of important tree species, particularly the large <i>Acacia</i> trees found on the sites. • Do not clear cut the entire development site, but rather keep the few individuals and/or clumps of trees/shrubs not directly affecting the developments as part of the landscaping especially important for shade in the hot climate. • The trees that are to be kept should be clearly marked with “danger tape” to prevent accidental removal. • Regular inspection of the “danger” tape should be carried out.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • The very important trees should be “camped off” to prevent the unintended removal or damage to these trees. • Recommend the planting of local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species. • Transplant removed trees where possible, or plant new trees in lieu of those that have been removed. • Prevent the introduction of potentially invasive alien ornamental plant species such as; Lantana, Opuntia, Prosopis, Tecoma, etc.; as part of the landscaping as these species could infestate the area further over time. • Prevent contractors from collecting wood and veld food such as amphibians, migrating birds, etc. during the construction phase.
Pressure on infrastructure	<ul style="list-style-type: none"> • Ensure that the workforce is provided with temporary toilets during the construction phase. • These toilets should be emptied and maintained regularly. • Waste from the toilets should be disposed of at the waterworks of Otjiwarongo. • No open urination and defecation are allowed in the development area. • A sufficient number of waste bins should be placed around the site for the soft refuse. • A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • Solid waste will be collected and disposed of at a designated local landfill in Otjiwarongo. • Train workers on saving mechanisms for water and electricity. • Ensure water and electricity use is metered and properly recorded.
Surface and ground water impacts	<ul style="list-style-type: none"> • It is recommended that construction takes place outside of the rainy season in order to limit flooding on site and surface water pollution. • No dumping of waste products of any kind in or in close proximity to water bodies. • Heavy construction vehicles should be kept out of any surface water bodies and the movement of construction vehicles should be limited where possible to the existing roads and tracks. • Ensure that oil, fuel and lubricants spills from construction vehicles and machinery are prevented and that where these occur, that they are appropriately dealt with.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Drip trays must be placed underneath construction vehicles when not in use to contain all oil that might be leaking from these vehicles. • Contaminated runoff from the construction site should be prevented from entering the surface and ground water bodies. • All materials on the construction site should be properly stored. • Disposal of waste from the site should be properly managed and taken to a local landfill in Otjiwarongo. • Ablution facilities at the construction sites should be located at least 30 m away from any surface water. • Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment these should be done at an area properly suited and prepared to receive and contain polluted waters.
Soil erosion impacts	<ul style="list-style-type: none"> • Clear the vegetation of the project area in phases during the construction period in order to keep the soil more compacted as well as to limit overall disturbance to the area over time. • Do not clear cut the entire development site, but rather keep the few individuals and/or clumps of trees/shrubs not directly affecting the developments, important for mitigating erosion. • It is recommended that construction takes place outside of the rainy season in order to limit potential flooding and the run off of loose soil causing further erosion. • Appropriate erosion control structures must be put in place where soil may be prone to erosion. • Checks must be carried out at regular intervals to identify areas where erosion is occurring. • Appropriate remedial actions are to be undertaken wherever erosion is evident.
Health, safety and security	<ul style="list-style-type: none"> • Ensure that all construction personnel are properly trained depending on the nature of their work. • Provide for a first aid kit and a properly trained person to apply first aid when necessary. • A wellness program should be initiated to raise awareness on health issues, especially the impact of sexually transmitted diseases. • Provide access to free condoms in the workplace throughout the construction phase. • Facilitate access to Antiretroviral medication for construction personnel. • Restrict unauthorised access to the site and implement access control measures.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Clearly demarcate the construction site boundaries along with signage of no unauthorised access. • Clearly demarcate dangerous areas and no-go areas on site. • Staff and visitors to the site must be fully aware of all health and safety measures and emergency procedures. • Contractors must comply with all applicable occupational health and safety requirements. • The workforce should be provided with all necessary Personal Protective Equipment where appropriate. • Adhere to the Covid-19 protocols as they are applicable from time to time.
Air quality	<ul style="list-style-type: none"> • All loose material should be kept on site for the shortest possible time. • It is recommended that dust suppressants such as Dustex be applied to all the construction clearing activities to minimise dust. • Construction vehicles to use only designated roads. • During high wind conditions the contractor must make the decision to cease works until the wind has calmed down. • Cover any stockpiles with plastic to minimise windblown dust. • Provide workers with dust masks. • Ensure construction vehicles are well maintained to prevent excessive emission of smoke.
Noise	<ul style="list-style-type: none"> • No amplified music should be allowed on site. • Inform immediate neighbours of construction activities to commence and provide for continuous communication between the neighbours and contractor/s. • Limit construction times to acceptable daylight hours. • Install technology such as silencers on construction machinery. • Do not allow the use of horns as a general communication tool, but use it only where necessary as a safety measure. • Provide protective equipment such as ear muffs and ear plugs to workers.
Traffic	<ul style="list-style-type: none"> • Limit and control the number of access points to the site. • Ensure that road junctions have good sightlines.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Construction vehicles need to be in a road worthy condition and maintained throughout the construction phase. • Transport the materials in the least number of trips as possible. • Adhere to the speed limit. • Implement traffic control measures where necessary. • Minimise the movement of heavy vehicles during peak time.
Waste management	<ul style="list-style-type: none"> • It is recommended that waste from the temporary toilets be disposed of at the Wastewater Treatment Works in Otjiwarongo. • A sufficient number of waste bins should be placed around the site for the soft refuse. • A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • The waste containers should be able to be closed to prevent birds and other animals from scavenging. • Solid waste will be collected and disposed of at a designated local landfill in Otjiwarongo.
Hazardous substances	<ul style="list-style-type: none"> • All chemicals and other hazardous substances must be stored and maintained in accordance with the Hazardous Substances Ordinance (No. 14 of 1974), with all relevant licences and permits to be obtained where applicable. • Given the potential harm to human health during handling and use of any of hazardous substances it is essential that all staff be trained with regards to the proper handling of these substances as well as First Aid in the case of spillage or intoxication. • Bulk storage areas for substances should be bunded and capable to hold 120% of the total volume of a given substance stored on site.
Social	<ul style="list-style-type: none"> • Control movement of construction workforce. • Ensure local procurement where commodities are available locally.

5.3 OPERATION AND MAINTENANCE PHASE

The management actions included in **Table 5-3** below apply during the operation and maintenance phase of this development.

Table 5-3: Operation and maintenance management actions

OPERATIONAL PHASE IMPACTS	
Impact	Mitigation Measures
Air quality	<ul style="list-style-type: none"> • Manage activities that generate emissions or dust. • Minimise the movement of vehicles in the area. • The development needs to be controlled and managed as required by the Public Health Act (Act No. 36 of 1919) and Atmospheric Pollution Prevention Ordinance (No. 11 of 1976).
Noise	<ul style="list-style-type: none"> • Limit the types of activities that generate excessive noise. • No activity having a potential noise impact should be allowed after 18:00 if possible. • Continuous monitoring of noise levels should be conducted to make sure the noise levels do not exceed acceptable limits.
Waste management	<ul style="list-style-type: none"> • A sufficient number of waste bins should be placed on the properties for the soft refuse. • A sufficient number of skip containers for the heavy waste and rubble should be provided for at appropriate sites. • The waste containers should be able to be closed to prevent birds and other animals from scavenging. • Solid waste will be collected and disposed of at a designated local landfill in Otjiwarongo. • Normal refuse such as cans, glass, paper and plastic should be segregated at source and be transported for recycling. • Oils, lubricants etc. will be collected and reused where feasible. • Metal waste will be accumulated and sent for recycling.

OPERATIONAL PHASE IMPACTS	
Impact	Mitigation Measures
Infrastructure development	<ul style="list-style-type: none"> • It is recommended that alternative and renewable sources of energy be explored and introduced into the proposed development to reduce dependency on the grid. • Solar geysers and panels should be considered to provide for general lighting and heating of water and buildings. • Designs and building materials should be as such to reduce dependency on artificial heating and cooling in order to limit the overall energy consumption. • Water and electricity saving mechanisms and education should be incorporated within the culture of the development’s operations and employees in order to further reduce water and electricity demand.
Quality of life	<ul style="list-style-type: none"> • The development will serve as an important economic activity that provides jobs. This will have a positive impact on the quality of life of the workers in terms of household incomes, but also the contribution to the Gross Domestic Product of the region and country.
Visual and Sense of Place	<ul style="list-style-type: none"> • It is recommended that more ‘green’ technologies be implemented within the designs and building materials of the development where possible in order to minimise the visual prominence of such a development within the more natural surrounding landscape. • Natural colours and building materials such as wood and stone should be incorporated. • Visual pollutants can further be prevented through mitigations such as keeping existing vegetation, introducing indigenous trees; keeping structures unpainted and minimising large advertising billboards.

5.4 DECOMMISSIONING PHASE

The decommissioning of this development is not foreseen. In the event that this development is decommissioned a dedicated decommissioning plan has to be developed and implemented.

Appendix B - Water Quality Guidelines