

APPENDIX H

ENVIRONMENTAL MANAGEMENT PLAN

TABLE OF CONTENTS

1	PLANNING AND DESIGN PHASE	4
2	CONSTRUCTION TENDER PREPARATION PHASE	5
2.1	General Requirements For The Emp – Constructiion Phase	5
2.1.1	EMP Administration	5
2.1.2	Roles and Responsibilities.....	5
2.2	ENVIRONMENTAL AWARENESS TRAINING.....	7
3	CONSTRUCTION MITIGATION DETAILS.....	10
4	OPERATION AND MAINTENANCE PHASE.....	26
	APPENDIX A: LIST OF PERMITTED INDIGENOUS TREES TO PLANT	27

1 LEGAL REQUIREMENTS

The table below provides a list of permit and legal requirements to be met during the construction phase, and to be considered during the planning phase of the project. Relevant instructions are included under the various phases.

Table 1: Relevant legislated permit requirements

THEME	LEGAL INSTRUMENT	MANAGEMENT REQUIREMENTS	CONTACT PERSON
Archaeology	National Heritage Act 27 of 2004	All protected heritage resources (e.g. human remains etc.) discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.	Rev Salomon April Tel: (061) 244 375/ 385/594
Environmental	Environmental Management Act 7 of 2007 EIA Regulations (EIAR) GN 57/2007 (GG 3812)	The amendment, transfer or renewal (after three years) of the Environmental Clearance Certificate (EIAR s19 & 20). ECC for the borrow pits.	Ms Saima Angela Tel: 061 284 2751
Forestry	Forest Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	<ul style="list-style-type: none"> Protected tree species and any vegetation within 100 m from a watercourse may not be removed without a permit. A Harvesting Permit is required if wood is to be collected (harvested) for use as fuel. Protected tree species to be removed require a permit. 	Vincent Louw – Deputy Director of Forestry 0612087327
Labour	Labour Act 11 of 2007 Health and Safety Regulations (HSR) GN 156/1997 (GG 1617).	Adhere to all applicable provisions of the Labour Act and the Health and Safety regulations.	Labour Law Advice: Tel: 061 309 957
Water	Water Resources Management Act 13 of 2013 Windhoek Town Planning Scheme	Water licences are required for water abstraction and use (s44), unless obtained from the City of Windhoek. Sections 26 and 29 (no permits, but restrictions incorporated into this EMP). City of Windhoek Drought Response Plan	Grazy Tshipo 264 61 290 2373

2 PLANNING AND DESIGN PHASE

Table 2: Management requirements for the Planning and Design phase

ASPECT	MANAGEMENT REQUIREMENT
Compensation	<ul style="list-style-type: none"> A Compensation Action Plan should be devised, whereby each individual owner affected by the project is approached and negotiation takes place for compensation according to Government Compensation Policy.
Tender documents	<ul style="list-style-type: none"> Ensure that this EMP is included in all construction contracts. Communicate specific details to the tenderers, to ensure they are fully aware of specific restrictions, e.g. construction camps outside of groundwater protection zone, etc.
Communication	<ul style="list-style-type: none"> Communicate with the City of Windhoek to confirm the final coordinates for the road. Establish a forum for groundwater quality monitoring with the City of Windhoek. Communicate with the City of Windhoek when construction is to take place so that appropriate public notices may go out.
Environmental Clearance	<ul style="list-style-type: none"> Renewal of the Environmental Clearance of the project, as well as Environmental Clearance Application for the borrow pits.
Survey	<ul style="list-style-type: none"> During the survey, identify all mature trees, including species of Camel Thorn, Sweet Thorn, Worm Cure False Thorn, Shepherds Tree. Mark them on the plans and consider which may be retained.
Alignment/groundwater protection	<p>Design a calcrete base for the section explained in Appendix A. Road surfaces design should accommodate rapid drainage of storm runoff to a channel away from the natural drainage and containment of accidental spillage within the calcrete base.</p> <p>Implement baseline monitoring as explained in Appendix A.</p>
Water Conservation	<p>The source for construction water should be considered and planned according to the applicable water restrictions at the time of construction. The Contractor should devise a water conservation plan which should adhere to local authority regulations and should demonstrate sound water conservation principles. The source for construction water, if from boreholes, should be accompanied by the necessary consultation with relevant stakeholders as well as permits from the Ministry of Agriculture and Land Reform.</p>
Noise	<p>A specialist is to be appointed to assess noise impact as a result of the road change, and to recommend mitigation measures to be incorporated into the design of the road. These design measures should be integrated with the design of the road.</p>
Heritage	<ul style="list-style-type: none"> An archaeologist needs to consider the following, and make recommendations when the final design is available: The historical buildings in the vicinity of the settlement of Aris and the

surviving section of the 19th century wagon route.

- These may either require mitigation or should be demarcated during construction to ensure protection, depending on the location of the route and the amount of activity foreseen there.
- The above recommendations need to be carried forward to the tender documents for the contractor to implement.

3 CONSTRUCTION TENDER PREPARATION PHASE

3.1 GENERAL REQUIREMENTS FOR THE EMP – CONSTRUCTION PHASE

3.1.1 EMP Administration

- Copies of this EMP shall be kept at the site and will be distributed to all contract personnel. All personnel shall be required to familiarize themselves with the contents of this document.

3.1.2 Roles and Responsibilities

- The implementation of this EMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during each phase.

a) Contractor

- The Contractor shall appoint a person from the construction team to take responsibility for the implementation for all provisions of this EMP.
- The Contractor shall report on the status of the implementation of the provisions of the EMP.
- The contractor should implement the environmental awareness training as stipulated in this report.
- The contractor must list the stakeholders of the project and their contact details with whom communication would be required throughout the contract. This list, together with an indication of how stakeholder communication will be done throughout construction must be agreed upon and given to the ER before construction commences.

- The contractor is also responsible for compliance to this EMP by all sub-contractors. Make sure that all sub-contractors have a copy of this ESMP and that they understand its contents. Include the ESMP in the sub-contracts/agreements with sub-contractors.
- The Contractor must adhere to the regulations pertaining to Health and Safety, including the provision of protective clothing and shoes, failing which the contract may be ended immediately.

b) Employer's Representative (ER)

- The Developer needs to appoint an Employer's Representative (ER) that could act as the Employer's on-site implementing agent and will be responsible to ensure that the Employer's responsibilities are executed in compliance with relevant legislation and the ESMP. In addition to general project management, the ER in collaboration with the developer has the responsibility to appoint the Environmental Control Officer (ECO) (see below).
- Any on-site decisions regarding environmental management are ultimately the responsibility of the ER. The on-site ER shall assist the ECO where necessary and will have the following responsibilities in terms of the implementation of this ESMP:
- Ensuring that the necessary environmental authorizations and permits have been obtained.
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary.
- Ordering the removal of person(s) and/or equipment not complying with the ESMP specifications.
- Providing input into the ECO's ongoing internal review of the ESMP, this review report is submitted to the Employer.

c) Environmental Control Officer (ECO)

- The Environmental Control Officer (ECO) will be a competent person appointed by the ER to act as the Employer's representative to monitor and review the on-site environmental management and implementation of this ESMP by the Contractor.
- The ECO shall be on site daily during the construction contract. The ECO's duties will include the following:
 - Assisting the ER in ensuring that the necessary environmental authorizations and permits have been obtained.

- Maintaining open and direct lines of communication between the ER, Employer, Contractor and I&APs with regard to environmental matters.
- Regular site inspections of all construction areas with regard to compliance with the EMP.
- Monitoring and verifying adherence to the EMP, monitoring and verifying that environmental impacts are kept to a minimum.
- Taking appropriate action if the specifications are not followed.
- Assisting the Contractor in finding environmentally responsible solutions to problems.
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel coming onto site.
- Advising on the removal of person(s) and/or equipment not complying with the specifications (via the ER).
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP (via the ER).
- Auditing the implementation of the EMP and compliance with authorization on a monthly basis.
- Undertaking a continual review of the EMP and recommending additions and/or changes to the document.

3.2 ENVIRONMENTAL AWARENESS TRAINING

The Contractor shall ensure that adequate environmental awareness training of site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the ESMP. The presentation shall be conducted, as far as is possible, in the employee's language of choice.

As a minimum, training should include:

- Explanation of the importance of complying with the ESMP.
- Discussion of the potential environmental impacts of construction activities.
- The benefits of improved personal performance.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the specifics of this ESMP and its specification (no-go areas, etc.).

- Explanation of the management structure of individuals responsible for matters pertaining to the ESMP.

The contractor shall keep records of all environmental training sessions, including names, dates and the information presented.

3.3 MANAGEMENT REQUIREMENTS OF THE TENDER PREPARATION PHASE

Table 3 below provides actions to be taken during the tender preparation phase.

Table 3: Construction tender preparation phase management requirements

ASPECT	MANAGEMENT REQUIREMENTS
EMP implementation	Relevant sections of this EMP should be included in the tender documents for all development so that tenderers can make provision for implementation of the EMP.
Financial provision	<ul style="list-style-type: none"> • Financial provision for applying for Environmental Clearance Certificates for the borrow pits. • Financial provision for the compilation of a Waste Management Plan should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. • Financial provision for citing the construction camp outside of the groundwater protection zone (See waste management Section, Section 3A.) • Financial provision for hauling to borrow pits further away, topsoil management and the rehabilitation of borrow pits should be included as a cost item within construction tender documents (even though borrow pits are not permitted along Section 1B). • Financial provision for the co-opting of a health officer from the Ministry of Health and Social Services to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase should be included as a cost item within construction tender documents. • Financial provision for the facilitation of an induction programme for both senior, casual construction personnel as well as subcontractors and associated personnel should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. • Financial provision for the compilation of a Tree Management Plan should be included as a cost item within construction tender documents • Financial provision for the drafting of a Communication Plan should be included as a cost item within construction tender documents. • Financial provision for the implementation of the mitigation measures as prescribed by the Archaeological Specialist for the historical features in the vicinity of Aris and the historical wagon track.
Recruitment	<ul style="list-style-type: none"> • Provisions designed to maximise the use of local labour should be included within tenders concerning the construction and/or maintenance of services infrastructure.

- A provision stating that all unskilled labour should be sourced from local communities should be included within tenders .
- Specific recruitment procedures ensuring local firms enjoy preference during tender adjudication should be included within tenders concerning the construction and/or maintenance of services infrastructure
- Provisions promoting gender equality pertaining to recruitment should be included within tenders concerning the construction and/or maintenance of services infrastructure.
 - Women should be given preference for certain jobs (e.g. flag bearers)

4 CONSTRUCTION MITIGATION DETAILS

The following table provides a large scale overview of all the major environmental management themes pertaining to both generic and site specific construction mitigation details. This table serves to act as quick reference, for the detailed mitigation details that follow below, for the implementation of the construction component of this EMP.

Table 4: Generic and site-specific environmental management actions for the construction phase

THEME	OBJECTIVE	SECTION
Waste management	Avoid and where not possible minimise all pollution associated with construction.	Section A
Borrow pits	Ensure topsoil protection and post-construction rehabilitation.	Section B
Health and safety	Safeguard health and safety of labourers and general public.	Section C
Dust and noise	Avoid and where not possible minimise dust and noise associated with construction.	Section D
Environmental training and awareness	Awareness creation regarding the provisions of the EMP as well as importance of safeguarding environmental resources.	Section E
Environmental conservation	Minimise construction activity footprint and safeguard biodiversity in ecologically sensitive areas.	Section F
Employment/ Recruitment	Minimise negative conflict through legal and fair recruitment practices.	Section G
Stakeholder communication	Provide a platform for stakeholders to raise grievances and receive feedback and hence minimise negative conflict	Section H
Socio-economic and Miscellaneous	Ensure due consideration is given to matters regarding the cultural and general wellbeing of the affected community and matters incidental thereto.	Section I

SECTION A: WASTE MANAGEMENT

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Waste management plan	The Contractor should compile a Waste Management Plan which should address as a minimum the mitigation measures included below.
Hazardous waste	<ul style="list-style-type: none"> • All heavy construction vehicles and equipment on site should be provided with a drip tray. – Drip trays are to be transported with vehicles wherever they go. – Drip trays should be cleaned daily and spillage handled, stored and disposed of as hazardous waste. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should be take place only at a designated workshop area. – The workshop area should be lined with concrete. – The workshop should have an oil-water separator for collect run-off from washing. • Spilled concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. • All hazardous substances (e.g. fuel etc) or chemicals should be stored in a specific location on an impermeable surface which is bunded.
Sewage and grey water	<ul style="list-style-type: none"> • Do not allow the sewage (black water) to be discharged directly onto open soil. • All sewage must be removed regularly and disposed of at a recognised (municipal) sewage treatment facility. • The water collected from wash basins and showers (grey water), should not be left standing for long periods of time as this promotes mosquito breeding as well as parasite and bacterial proliferation. Grey water should be recycled: <ul style="list-style-type: none"> – Used for dust suppression; – Used to water a vegetable garden, or to support a small nursery; – Used to clean equipment. • If grey water will not be recycled it should be removed along with the black water on a regular basis.
General waste	<ul style="list-style-type: none"> • The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to a recognised (municipal) waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot. • A sufficient number of separate waste containers (bins) for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. • Construction labourers should be sensitised to dispose of waste in a responsible manner

	<p>and not to litter.</p> <ul style="list-style-type: none"> No waste may remain on site after the completion of the project
SPECIFIC MITIGATION DETAILS	
	<ul style="list-style-type: none"> Construction camps should be sited outside of the groundwater protection zone – Temporary laydown areas may be considered, but they should be free of activities or equipment that involve any kind of hazardous materials, hydrocarbons, or any other substances that could spill or leak on the ground.
	<ul style="list-style-type: none"> The storage of hazardous materials should be done at the construction camp, outside of the groundwater protection area. It should be noted that the entire area is sensitive for groundwater pollution and no hazardous materials should be stored outside the camp in a bunded area.
	<ul style="list-style-type: none"> All spillages should be treated with the utmost care in the entire area. A spill handling procedure should be in place and cleaned up as soon as the spill has occurred. All potential areas where hazardous substances are handled such as hydrocarbons and concrete, can seep into the groundwater sources, and measures should be in place to protect groundwater resources, including the following: <ul style="list-style-type: none"> No handling of any hazardous substances including concrete, hydrocarbons, diesel, and other chemicals should be allowed near a riverbed, in the groundwater protection area, a borehole, or open water source. All handling of such substances should only be done at a designated bunded area, approved for the purpose.

SECTION B: BORROW PITS

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
ECC	The borrow pits require specific Environmental Clearance Certificates. No borrow pits shall be allowed within the aquifer area (Appendix B).
Topsoil	The Contractor should adhere to prescribed measures emanating from the borrow-pit investigation and the design for excavations and disposal of spoil material.
Rehabilitation	<ul style="list-style-type: none"> • All borrow pits need to be rehabilitated as follows: <ul style="list-style-type: none"> – Topsoil must be stockpiled separately when it is opened and covered over the borrow pits during rehabilitation. – Borrow pits may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. – Rehabilitated borrow pits need to match the contours of the existing landscape. – Also take note of drainage channels in the vicinity of the borrow pit. The rehabilitated area should not be higher (or lower) than a drainage channel. This ensures the efficiency of revegetation reduces the chances of potential erosion. – Topsoil is to be spread across borrow pit areas evenly. – Deep ripping is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. – Ripping should be done along slopes, not up and down a slope which could lead to enhanced erosion. – In grazing areas, rehabilitated borrow pits needs to remain fenced off after the decommissioning of the project to prevent livestock from denuding the newly established vegetation on the area.
SPECIFIC MITIGATION MEASURES	
	<ul style="list-style-type: none"> • According to Section 29 of the Windhoek Town Planning Scheme, no borrow pits may be made within the Windhoek municipal area.

APPENDIX C: HEALTH AND SAFETY

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION MEASURES	
HIV/AIDS and TB training	The Contractor should approach the Ministry of Health and Social Services to co-opt a health officer to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase.
Road Safety	<ul style="list-style-type: none"> • Demarcate roads clearly. • Off-road driving should not be allowed. • All vehicles that transport materials to and from the site must be road worthy. • Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules. • Loads upon vehicles should be properly secured to avoid items falling off the vehicle.
Safety Around Excavated and Work Areas	<ul style="list-style-type: none"> • Excavations should be left open for an absolute minimum time. • Excavate short lengths of trenches and box areas for services or foundations in such a way that the trench will not be left unattended for more than 24 hours. • Demarcate the following areas with danger tape: <ul style="list-style-type: none"> – All excavation works; – Soil and other building material stockpiles; and – Temporary waste stockpiles • Provide additional warning signage in areas of movement and in "no personnel" areas where workers are not active. • Borrow pits are to be fenced off with steel wire fencing. • Work areas must be set out and isolated with danger tape on a daily basis. • All building materials and equipment are to be stored only within set out and demarcated work areas. • Only construction personnel will be allowed within these work areas. • 2 fire extinguishers should be available at fuel storage area and cooking facilities (in the event that migrant workers reside near the construction site) • Comply with all mitigation measures laid out in Section A (Waste Management mitigation details)
Ablutions	<ul style="list-style-type: none"> • Separate ablutions (toilet and shower) should be available for men and women and should clearly be indicated as such. • Portable toilets (i.e. easily transportable) should be available at every construction site: <ul style="list-style-type: none"> – 1 toilet for every 25 females. – 1 toilet for every 50 males.

ASPECT	MITIGATION MEASURE
	<ul style="list-style-type: none"> – Sewage waste needs to be removed on a regular basis to an approved (municipal) sewage disposal site. Alternatively, pump it into sealable containers and store it until it can be removed. – Workers responsible for cleaning the toilets should be provided with latex gloves and masks.
Open fires	<ul style="list-style-type: none"> • No open fires may be made anywhere on site. • No wood may be collected within or near the project area. The Contractor must supply wood (or other fuel) for cooking or heating purposes.
General	<ul style="list-style-type: none"> • The regulations pertaining to Health and Safety will be obligatory on this contract. • Dust protection masks should be provided to workers if they complain about dust. • Potable water should be provided to workers. • No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). • No workers should be allowed to drink alcohol during work hours. • No workers should be allowed on site if under the influence of alcohol.

SECTION D: DUST AND NOISE

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Dust	Dust suppression measures should be made applicable where there is a risk to nearby communities, the workforce and sensitive plant communities.
Noise	Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas.
SPECIFIC MITIGATION DETAILS	
Dust	Due to the large traffic volumes on this road, continued dust suppression is compulsory. The contractor is to spray the exposed surfaces with semi-purified water and with a chemical dust surfactant (biodegradeable). The Contractor is to submit the product that will be used, for approval by the City of Windhoek and the environmental monitoring consultant. All relays are to be surfaced with bitumen.

SECTION E: ENVIRONMENTAL TRAINING AND AWARENESS

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Environmental Induction (Training)	<p>All construction workers are to undergo environmental induction (training) which should include as a minimum the following:</p> <ul style="list-style-type: none"> • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of construction activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities. • Explanation of the specific mitigation measures within this EMP especially unfamiliar provisions. • This training must be undergone by all new workers before they may commence with work. • A signed copy is to be kept for every worker that this course was attended. Workers need to be made aware of disciplinary actions and/or penal measures and procedures in case of non-conformance.

SECTION F: ENVIRONMENTAL CONSERVATION

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Conservation of vegetation	<ul style="list-style-type: none"> • The layout and building design should incorporate large indigenous trees. • The Contractor should compile a Tree Management Plan which should include the following as a minimum: <ul style="list-style-type: none"> – Trees with a trunk size of 150 mm and bigger should be surveyed, marked with paint (readily visible) and protected; – Trees with a trunk size of 150mm and bigger, which are impossible to conserve, need to be identified and their location recorded on a map; – The Contractor should apply to the nearest forestry office for a permit to remove these trees. – A list should be compiled of all trees to be removed detailing their coordinates, the species as well as which trees will be planted to replace these. The nursery where these trees will be sourced from should also be included; – Each tree that is removed needs to be replaced after construction (see Appendix A for list of recommended trees); – Some of these trees can be obtained at the nearest forestry office or at a commercial nursery. The forestry officers can also direct to nearby nurseries where additional trees may be bought. • Areas to be cleared of vegetation need to be demarcated and kept to a minimum. These need to be marked and the entire workforce instructed and managed so that the restricted area boundaries are honoured.
Materials camp and lay-down areas	<p>Suitable locations for the materials camp and lay-down areas should be identified with the assistance of the ER and the following should be considered in selecting these sites:</p> <ul style="list-style-type: none"> • The areas designated for the proposed services infrastructure should be used as far as possible • Second choice should be degraded land • Avoid sensitive areas (e.g. protected archaeological sites, rivers or drainage lines).
Water conservation	<p>Refer to the water conservation plan referred to under "Tender Preparation". The water conservation plan is to be implemented and followed during construction.</p>
SPECIFIC MITIGATION DETAILS	
Conservation of vegetation	<p>The contractor should note that the area is on the City's main aquifer recharge area. It is highly vulnerable to pollution. Removal of vegetation reduces infiltration capacity of the aquifer, and therefore damages this highly valuable water resource. It is therefore important that all grass and shrub cover be kept intact where possible and that the contractor makes every possible effort to stay within a designated footprint. This will be challenging, but additional measures to achieve this will be required on this</p>

project. The following are specifically applicable:

- All protected trees to be removed need permits obtainable from the Forestry Office. These include *Boscia Albitrunka*, *Albizia Anthelmintica*, and *Acacia Erioloba*.
- The area below (Figure 1) with lithops, a protected species, is a "no-go area, no activities related to the construction of the road are to take place in this area.
- The areas in Figures 2 (Camelthorn area) and 3 (Aloes) are to be kept intact as far as possible. Trees and Aloes along these stretches are to be noted specifically and avoided by marking the area and keeping activity there to a minimum.
- Topsoil must be stored where relays and other areas need to be opened up and these areas rehabilitated by covering them with the stored topsoil. This needs to be done continuously as construction progresses.
- Construction laydown areas are to be placed outside of the groundwater sensitivity zone (**See Appendix A of the Environmental Impact Report**).
- According to the City of Windhoek Drought Response Plan, semi-purified water is to be used for construction purposes. (At the time of this report, a water crisis situation requires this, however, the situation needs to be re-assessed according to the time frame for construction).



Figure 1: No-go area on Farm Regenstein.



Figure 2: Sensitive stretch near Bergland/Oamites.



Figure 3: Sensitive stretch carrying dense *Aloe littoralis* population.

SECTION G: EMPLOYMENT/RECRUITMENT

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Legislation	<p>Adhere to the legal provisions in the Labour Act (see The table below provides a list of permit and legal requirements to be met during the construction phase, and to be considered during the planning phase of the project. Relevant instructions are included under the various phases.</p> <p>Table 1) for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc) in the Contract.</p>
Recruitment	<p>The Contractor should compile a formal recruitment process including the following provisions as a minimum:</p> <ul style="list-style-type: none"> • The local authority (town council, community development division) should assist with the recruitment process. • Recruitment should not take place at the construction site. • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed upon process. • Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those from the project area (Windhoek). • Clearly explain to all job-seekers the terms and conditions of their respective employment contract (e.g. period of employment etc.) – make use of interpreters when necessary.

SECTION H: STAKEHOLDER COMMUNICATION

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Communication plan	<p>The Contractor should draft a Communication Plan, which should outline as a minimum the following:</p> <ul style="list-style-type: none"> • How stakeholders, who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records; • How these stakeholders will be consulted on an ongoing basis; • Make provision for grievance mechanisms – i.e. how concerns can/ will be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event feedback is deemed unsatisfactory.
General communication matters	<ul style="list-style-type: none"> • The ER must appoint an ECO to liaise between the Contractor, stakeholders, Developer, and consultants. The appointed Contractor shall appoint a person from the construction team to take responsibility for the implementation for all provisions of this EMP. • The Contractor shall at every site meeting report on the status of the implementation of all provisions of the EMP. • The Contractor should implement the environmental awareness training as stipulated in Section E. • The Contractor must list the stakeholders of the project and their contact details with whom ongoing communication would be required for duration of the contract. This list, together with the Communication Plan must be agreed upon and given to the ER before construction commences. • The Communication Plan, once agreed upon by the Developer, shall be binding. • All communication with the stakeholders must take place through the ECO. • A copy of the EMP must be available at the site office and should be accessible to all stakeholders • Key representatives from the above mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding project progress. • The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences. • A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. • All people on the stakeholders list should be informed about the availability of the complaints register in writing by the ER prior to the commencement of construction activities.

SPECIFIC MITIGATION DETAILS	
	<ul style="list-style-type: none">• The stakeholders list shall at least include City of Windhoek, Environmental, Water and Property Divisions, Trustco (current lease agreement with City for the applicable commonage farm), Ministry of Health and Social Services (HIV/AIDS and Health and Safety issues) and all neighbouring or directly affected property owners or their representatives.• The Contractor needs to check the specific arrangements with regard to the historical buildings in the vicinity of the settlement of Aris and the surviving section of the 19th century wagon route, which should be given instructions for demarcation/mitigation by a specialist in advance of construction.

SECTION I: SOCIO-ECONOMIC AND MISCELLANEOUS

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Archaeology	<ul style="list-style-type: none"> • Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a “chance find” procedure should be applied in the order they appear below: <ul style="list-style-type: none"> – If operating machinery or equipment stop work; – Demarcate the site with danger tape; – Determine GPS position if possible; – Report findings to foreman; – Report findings, site location and actions taken to superintendent; – Cease any works in immediate vicinity; – Visit site and determine whether work can proceed without damage to findings; – Determine and demarcate exclusion boundary; – Site location and details to be added to the project’s Geographic Information System (GIS) for field confirmation by archaeologist; – Inspect site and confirm addition to project GIS; – Advise the National Heritage Council (NHC) and request written permission to remove findings from work area; and – Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required: <ul style="list-style-type: none"> – Apply the chance find procedure as described above; – Schedule a field inspection with an archaeologist to confirm that remains are human; – Advise and liaise with the NHC and Police; and – Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.

5 OPERATION AND MAINTENANCE PHASE

Table 5: Operation and maintenance phase mitigation measures

ASPECT	MITIGATION MEASURE
EMP implementation	If any construction is to be conducted as part of maintenance works for the services infrastructure within the project area please refer to the construction mitigation measures of this EMP (Section 8).
Post-construction usage	Borrow pits to be utilised post-construction should adhere to the same topsoil and rehabilitation measures outlined within construction mitigation measures of this EMP (Section 8) above.
Post-construction environmental training and awareness	All contractors appointed for maintenance work on the respective services infrastructure must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.
Monitoring	<p>Ensure that the groundwater monitoring is implemented – see Appendix A of the Environmental Impact Report.</p> <p>A hydrochemical sampling programme should be implemented to record the baseline water quality status (done before construction commences). Parameters that should be included are heavy metals nickel, zinc, copper, cadmium and iron; and hydrocarbon and microbiological content. The baseline sampling should be recorded and followed up with yearly sampling thereafter to record any changes in water quality along the highway.</p>

6 APPENDIX A: LIST OF PERMITTED INDIGENOUS TREES TO PLANT

COMMON NAME	SCIENTIFIC NAME
Worm-cure Albizia	<i>Albizia anthelmintica</i>
Sweet thorn	<i>Acacia Karroo</i>
Buffalo-thorn	<i>Ziziphus mucronata</i>
Camelthorn	<i>Acacia Erioloba</i>