UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR NAUTE KEETMANSHOOP PIPELINE REPLACEMENT PROJECT

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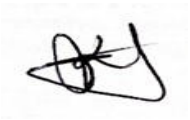

Proponent

JUNE 2025

Project Name:	***UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE UPGRADING AND REPLACEMENT OF THE WATER PIPELINE FROM NAUTE DAM TO KEETMANSHOOP, //KHARAS REGION***
The Proponent:	NAMWATER Namibia Water Corporation Ltd Private Bag 13389 Namibia
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1. INTRODUCTION

The EMP is for the proposed pipeline replacement project between Naute Dam and the town of Keetmanshoop, see section 8 for the Environmental Clearance Certificate (renewed **2022-08-06**) **ECC no. 0078.**

TriStone Africa and *Green Earth Environmental Consultants* were appointed to prepare an Environmental Management Plan (EMP) to guide the operations and activities of the proposed project. The EMP was prepared from information gathered from the proponent, literature reviews and knowledge of the site (based upon several site visits) as well as from experience with EIA's and EMP's conducted for other similar operations. The assessment concluded that the proposed activities will not pose any long term or irreversible threats to the receiving or surrounding environment if the operations are conducted along the guidelines of this EMP.

The EMP included in this document contains practical measures that should be taken and maintained by the Developer and Manager of the project in order to prevent and/or minimise potentially negative impacts on the environment, both from the ecological and social perspective, also to enhance positives. The EMP assigns rules, regulations and responsibilities and can be used by the MEFT and other relevant authorities as checklist to monitor compliance at the site. The idea is to minimize any negative impacts or to completely avoid it, if possible, in the operation of the proposed project and to enhance positive impacts.

The actions stated in this document (EMP) should be diligently followed in order to maintain a safe and healthy sustainable environment. The proponent is responsible to oversee that the EMP is implemented and adhered to at all time. MEFT is kindly requested to review and approve the EMP below and renew the Clearance Certificate.

In order to legalize the proposed activities that will take place on the site an Environmental Clearance Certificate (ECC) from The Ministry of Environment, Forestry and Tourism (MEFT) is required before implementation of the project. The MEFT indicated that they will consider the Environmental Clearance for the activities upon the submission of an Environmental Management Plan (EMP).

2. PROJECT BACKGROUND

2.1. LOCALITY OF PIPELINE

Naute Dam is situated about 45 km southwest of Keetmanshoop, Karas Region across the Löwen River, a tributary of the Fish River. The dam is linked to Keetmanshoop via a pipeline which transports treated water to the water storage and reticulation facilities of the Town. See plans below for the locality of Naute Dam, pipeline, pump stations, manholes, reservoirs and treatment plant:

Figure 1: Naute Dam Location

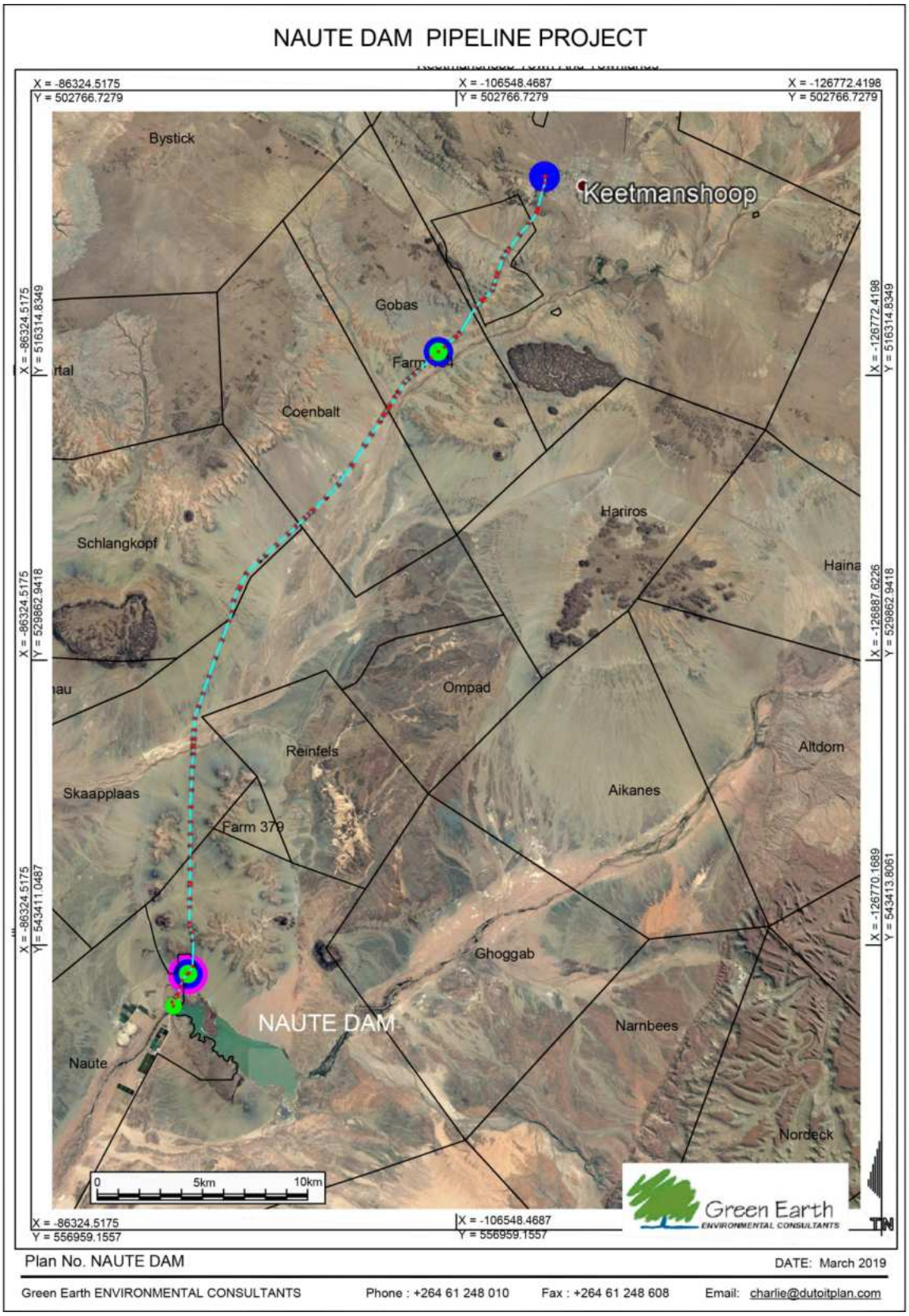


Figure 2: Naute Dam Pipeline Project

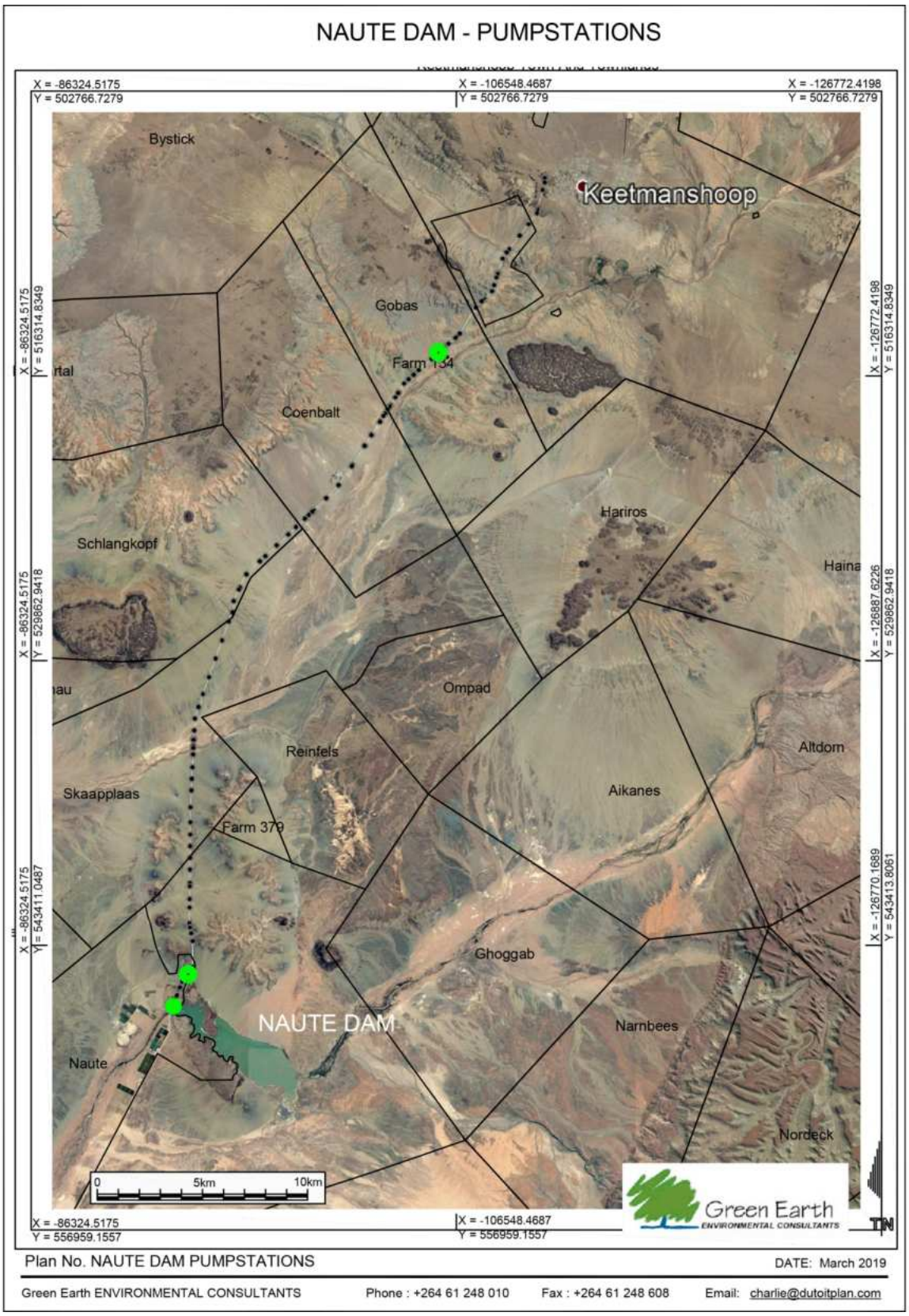


Figure 3: Naute Dam Pump Stations

3. EMP PRINCIPLES

The EMP is based on the principle that the relevant authorities with MEFT as responsible Ministry, through their Environmental Control Officer's (ECO) with the Proponent of the project as responsible person, should ensure that:

- The necessary environmental authorizations and permits have been obtained and are in use;
- Open and direct communication between the Proponent and Interested and Affected Parties (I&APs) with regards to environmental and ecological matters is maintained. A grievance procedure is included in the EMP which can be followed by aggrieved affected parties;
- As the Proponent (NamWater) will not carry out the construction but appoint a Contractor, it is proposed that the contractor will accept and adhere to the code of conduct applicable to NamWater's employees and their contractors. The code of conduct is included in this EMP;
- Regular site inspections of constructed areas and operations is conducted to ensure compliance with the EMP of the site;
- By complying with the guidelines of the EMP, the impact on the receiving environment is kept to a minimum or avoided;
- Immediate action is taken if EMP specifications are not followed or adhered to;
- The manager needs to find environmentally responsible solutions;
- All new personnel should be informed on the stipulations of the EMP and that environmental awareness is regarded as a high priority;
- Level of implementation and adherence to the EMP is audited on a regular basis.

There should be a clear message to the management and staff/workforce of the proposed activities that non-adherence to or non-compliance with the EMP can lead to the withdrawal of the Clearance Certificate and might lead to the closure of the operations. It is against this background that the EMP had been drafted.

4. RECOMMENDATION

The following measures are recommended:

- This Environmental Management Plan (EMP) be implemented to mitigate potential impacts which are associated with the planning, construction, operational and decommissioning phase of the project.
- When building infrastructure, consider green building designs and environmentally sustainable design principles in the layout plans of the development for example make use of solar panels, rainwater tanks, recycling depots, etc.
- All construction should be undertaken in such a way as to enhance the natural landscape and consider the visual impacts and benefits.
- Any activities that could potentially contribute to the pollution of any water courses will have to be directed away from rivers, ponds, dams or any water courses in order to prevent ground and surface water pollution.

- Specific consideration should be given to services such as fire brigades during construction and operation. It is not believed that fires will occur in the operational phase however precaution should still be taken.
- The risks of fuel spillage or leakage on both surface and ground water sources; bunding should be used to minimise the risks of fuel leakages/spills especially during construction.
- Storm water management: uncontrolled surface and storm water runoff that has been polluted with petroleum/diesel products has the potential to impact negatively on the surrounding environment if not managed properly.
- Traffic implications should be considered and measures drawn to cater for cars making use of the roads.
- Fire and explosion impacts: due to the flammable nature of the products to be handled and stored, there exist an opportunity for a fire/explosion due to the presence of vapours. This should be kept in mind, prevented and fire extinguishers should be placed where required.
- Air pollution: possible emission of fumes/airborne compounds should be controlled.

An Environmental Management Plan (EMP) will have to be conducted in order for the recommendations to be fully stated and taken in consideration by the proponent and manager.

5. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The proposed EMP has been drawn to give guidance to:

- Planning of future extensions or replacing of infrastructure, equipment and services **(Planning Phase)**;
- Constructing any infrastructure on the site **(Construction Phase)**;
- Operations concerning the daily management and running of the activities **(Operational phase);**
- Decommissioning of the activities **(Decommissioning Phase).**

5.1. PLANNING PHASE

The design, alignment and eventual placement of the pipeline infrastructure must fit into the surrounding environment and accommodate surrounding land uses by taking into consideration the natural environment and wildlife and farming activities. Placing the pipeline below ground is the preferred option. The natural environment should not be disturbed unnecessary if the pipeline is placed below ground. Limited blasting should take place. If certain sections of the pipeline have to be placed above ground due to practical or geophysical considerations, painting the pipe in earthy colours so that it can blend in with the prevailing environment is proposed. The manager/contractor must ensure that the sense of place be kept in accordance with the surrounding areas. Specific actions are required to ensure the negative effects or impacts are minimized on the site.

The planning and construction of the pipeline route should be done assuming the following:

- The pipeline should be mainly below ground.
- Housing of the workers will preferably be in Keetmanshoop. Workers to be transported daily to site.
- Sourcing of construction materials (sand and stone) will preferably be in Keetmanshoop. If due to cost considerations, sources closer to the pipeline route have to be used. It is advised that the quantities required is calculated and suitable sites be identified in the vicinity of the pipeline route and that a environmental scoping exercise for these specific sites be completed and an ECC be obtained for the utilization of these sites for the sourcing of materials.

Therefore, the following measures should be followed:

5.1.1. Addressing of Aesthetic and Visual Issues	
Responsible Person	**Measures**
The Proponent, Consultants and Contractor	a. The pipeline, manholes and pump stations should be placed below ground if the geological conditions allow. b. Sections of the pipeline that has to be placed above ground should be covered with materials or painted with colours to blend in with the natural environment. c. Ideally persons driving past the pipeline route should not be able to notice visually unpleasing objects on the site. d. Warning or directional signs relevant to the activity should comply with the requirements of the Roads Authority and avoid any neon or non-earthy signs that will reduce the sense of place. e.

5.1.2. Ensuring water consumption efficiency	
Responsible Person	**Measures**
The Proponent, Consultants and Contractor	a. The pipeline infrastructure to be designed as such as to ensure efficient operation and the quick detection of pipe bursts, leaks or pressure losses. b. The Municipality of Keetmanshoop should be consulted during the planning and design phase to promote efficiency in the distribution and storage of water. c. Planning of the pipeline infrastructure to provide for efficient water usage during construction.

5.1.3. Ensuring energy consumption efficiency	
Responsible Person	**Measures**
The Proponent, Consultants and Contractor	a. Preference must be given to the implementation of energy conserving and efficient systems. Renewable energy sources should be considered to supplement current power supplied from NamPower for the operation of the pumps. b. Devices or equipment which conserves energy must be introduced and used.

5.1.4. Limiting creation of solid waste	
Responsible Person	**Measures**
The Proponent, Consultants and Contractor	a. Construction materials (pipes, seals, chemicals and consumables) of which the waste/packing materials can be recycled or which are biodegradable must be introduced in order to limit the creation of solid waste which has to be taken out of the area to be managed and handled at another site.

5.1.5. Planning the Pipeline Route	
Responsible Person	**Measures**
The Proponent, Consultants and Contractor	a. It is proposed that the existing pipeline route is followed and that deviation from the current route should only be allowed if costs can be saved or operational efficiencies can be improved. Blasting next to existing pipeline cannot be done. b. Planning of the pipeline route should consider and respect the surface drainage systems and ensure that the natural surface drainage is not altered. c. Access roads for the construction and maintenance of the pipeline should follow existing public and/or service roads. The creation of additional roads or turning circles to be kept to a minimum. If additional roads must be created, it should be aligned in the pipeline servitude or along exiting farm roads to avoid unnecessary disturbance to the natural environment and the surrounding neighbouring farms. d. The final alignment of the pipeline route should be subject to a geophysical survey to identify areas where blasting is required for construction. A warning program to be included in the planning phase so that affected neighbours and workers on the site can be warned early when blasting will be undertaken.

5.2. CONSTRUCTION PHASE

The construction phase of the pipeline will mainly include the following activities:

(1) The establishment of construction camps;
(2) The handling, transportation and storage of construction materials;
(3) Handling and probable spillage of hazardous materials;
(4) The housing and transportation of construction workers;
    - Local workers should preferably be used;
(5) The movement and service of construction vehicles;
(6) Safety and security issues;
(7) The preparation of the pipeline route;
    - Clearance of the pipeline route;
    - Preparation of construction and service roads;
    - Preparation of the pipeline trench;
    - Blasting where required;
(8) Construction of the pipeline, manholes and pump stations;
    - Closing/covering of the pipeline in the trench;
    - Restoring of the pipeline route/trench to its natural state;
(9) Decommissioning of existing pipeline and associated infrastructure;
(10) Decommissioning of construction camp;

Construction is generally characterized by various activities that will take place on the site namely earthworks for the construction of infrastructure namely the pipeline, removal, relocation and planting of grasses/shrubs etc. All these activities have an unavoidable effect on the natural environment. Various actions must thus be undertaken to minimize the effect on the receiving and surrounding natural environment. The responsible persons in the entire process will be the proponent of the project, the developer, project manager, subcontractors, etc. The developer takes the ultimate responsibility during the construction phase.

MEFT and NamWater can ensure that the operations adhere to the EMP stipulations through regular site inspections. The manager must ensure that the developer are aware of the EMP stipulations and enforces it on site. Throughout any construction it will be the project manager's obligation to inspect the site at least once per month to make sure that all the mitigation measures are followed, adhered to and implemented. The project manager must do a final inspection and evaluation once the pipeline is completed. The project manager must also issue the contractor with a completion letter once he or she is satisfied that the project has been done in accordance with the Environmental Management Plan. A copy of the final letter must be sent to the Director of Environmental Affairs (DEA). NamWater will invite MEFT to accompany them on the final inspection of the pipeline to ensure proper rehabilitation has been done.

Damage to the environment during construction has a few origins that differ to large degree: accidental, negligent, spillage, vehicles, earthmoving equipment, generators, workshops and plant areas. There are mitigation measures that must be followed in order to minimize or avoid damage and pollution.

As stated earlier in the report, the construction of the pipeline and associated infrastructure should be done assuming the following:

- The pipeline should be mainly below ground.
- Housing of the workers will preferably be in Keetmanshoop. Workers to be transported daily to site.
- Sourcing of construction materials (sand and stone) will preferably be in Keetmanshoop. If due to cost considerations, sources closer to the pipeline route have to be used. For sourcing the materials closer to the pipeline, a geophysical study and environmental clearance will have to be obtained.

The following measures are based on MEFT regulations and must strongly be adhered to:

5.2.1. Establishment of Construction Camp	
Responsible Person	**Measures**
The Resident Engineer (RE), NamWater Environmental Manager (NEM) and Contractor	a. Preferably only one site should be prepared and used for the construction camp. b. The camp should be positioned to construct the pipeline as cost effectively as possible namely the cost of the transportation of materials and workers should be limited. The construction camp/site should preferably be in close proximity to services namely water, electricity and sewerage. c. If space is required for a camp or office site, it must be kept to a minimum. d. Chemical toilet facilities are preferred by The Ministry of Environment, Forestry and Tourism. Other approved toilet facilities such as a septic drain must be used and located on the camp site in a way that it does not cause any water or other pollution. e. The selected construction camp site required for upgrading the pipeline should be clearly marked and fenced in. f. Large trees should not be removed in order to make space for the construction camp.

5.2.2. General Regulations	
Responsible Person	**Measures**
The Project Manager and Contractor	a. No waste of any kind may be burned at the site. b. All the chemicals used to clean the surfaces namely basins, floors, tables, etc., must be biodegradable.

5.2.3. Community Relations	
Responsible Person	**Measures**
The Project Manager and Contractor	a. The proponent and personnel must have sound relations with neighbours in the vicinity of the site. b. They may not damage any cultural or archaeological sites. c. The manager must employ as many local people as possible for all levels of operation. d. They must make use of dispute resolution Methods and labour practices that are within the law and cultural norms. e. Staff must be trained in order that they have the knowledge to do their work properly. f. The manager must provide opportunities for career advancement and skills development.

5.2.4. Handling, Transportation and Storage of Construction Materials	
Responsible Person	**Measures**
The Resident Engineer (RE), NamWater Environmental Manager (NEM) and Contractor	a. Sand and rocks that will be used for construction may only be collected from an existing quarry with a license and an Environmental Clearance and not from the rivers/dams nearby. b. Materials must be sourced in a legal and sustainable way. Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) and submit these to the engineers for approval prior to commencement of any work. c. The transportation of construction materials should be done by qualified drivers with valid driver's licenses. d. The choice for the location of the storage areas must take into consideration prevailing winds, distance to water bodies and general on site topography. e. Storage areas should be secure so as to minimise the risk of crime. f. No children and animals are allowed on site during construction. g. Fire prevention facilities must be present at all storage facilities.

5.2.5. Handling and Probable Spillages of Potentially Hazardous/Toxic Materials	
Responsible Person	**Measures**
The Resident Engineer (RE), NamWater Environmental Manager (NEM) and Contractor	a. Hazardous substances are those that are potentially poisonous, flammable, carcinogenic, or toxic. Some examples are diesel, petroleum, oil, bitumen, cement, solvent based paints, lubricants, explosives, drilling fluids, pesticides, herbicides, liquefied petroleum gas (LPG). b. Hazardous storage areas must be bunded with an impermeable liner to protect groundwater and soil from contamination. The contractor shall submit a method statement to the engineer for approval. c. Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully. Ensure that access to storage areas is regulated. A fence must be constructed around the storage areas to prevent unnecessary access by wildlife. d. Possible emission of fumes/airborne compounds should be managed and minimised. - Construction vehicles and trucks should be monitored and serviced when required to avoid emissions. - Generators should only be used when required to avoid unnecessary fuel being used. e. Fuel spillage or leakage on both surface and ground water sources should be monitored. f. The following emergency clean up procedures should be taken when spillages or leakages occur: - Spillages should be cleaned by digging up the entire spill and disposing of it at a registered land fill site. - Any spillages of potentially toxic materials, whether by accident or through negligence, must be reported and the corrective action must be undertaken to 'clean' and to remove the evidence of the spillage. - The sand/gravel where the spillage occurred should be removed and transported to a registered land fill site. g. Workers should wear protective clothing to guard them from toxic materials or fumes. h. Make use of design structures and transfer equipment so as to avoid spillage as far as possible. i. Train the staff members on how to make use of diesel/fuel transfer and to avoid spillage. j. Any spill must be cleaned up immediately by removing the spill together with the polluted soil and disposing of it at a recognized dumping site or facility. k. When there is made use of diesel generators on site it must be placed on concrete slabs.

	l. When a workshop is introduced, the entire work area must be lined by concrete. m. Any runoff from the work areas either arising from wash downs or rainfall must be channelled into a pollution control pond. n. There must be a weekly monitoring of all equipment namely a visual check; there must also be a weekly monitoring of work areas. o. Solid waste, construction waste, fuel storage and trucks used for the transportation of building materials or workers may contribute to spillages therefore guidelines outlined above should be followed within all the activities named. p. Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. q. Storage areas containing hazardous substance / materials must be clearly sign posted. r. Residents/workers living/working adjacent to the construction site must be notified of the existence of the hazardous storage area. s. Staff dealing with these materials/substances must be aware of their potential impacts and follow appropriate safety measures. t. Contractors shall submit a method statement and programmes for the storage of hazardous materials and emergency procedures.

5.2.6. Housing and Transportation of Construction Workers	
Responsible Person	**Measures**
	a. All workers that need to reside on the site while construction is in progress will have to be housed in temporary structures like tents or caravans to limit the impact on the environment.

RE, NEM and Contractor	b. The workforce residing on the site must be provided with water, proper toilets, kitchen/cooking and washing facilities. c. The toilets established on the site must preferably be chemical toilets that is similar to the units used during road construction projects. d. Cooking on the site must be done on gas. When the workers make use of open fires, these must be made in a designated spot so that there will be no possibility for a veldt fire occurring. e. Although the surrounding settlers collect wood in the area, construction workers working or residing on site should not be allowed to collect wood for cooking purposes. The manager or developer must provide them with wood/charcoal preferably from intruder bush from outside sources. f. The workers that will be housed in Keetmanshoop will need to be transported to the project site/route daily. g. Transportation of the workers should be done in a safe manner. Drivers of the transportation vehicles should have valid driver's licenses, permits and adhere to all traffic regulations and safety measures. h. Local workers should receive preference for recruitment. Workers must have valid contracts and must obtain protective clothing namely safety boots, glasses and vests before construction is started.

5.2.7. Labour and social issues	
Responsible Person	**Measures**
RE, NEM) and Contractor	a. As stated above, the criteria for and selection of labourers, contractors and suppliers for the project should demonstrate preference for the local community. Such requirements should be included in contract documents and be monitored. b. The proponent and project manager need to decide if it will be feasible and cost effective to transport workers from Keetmanshoop to the project route daily or to have a construction camp site where workers can reside while upgrading and construction is in process.

	c. Contractors must ensure proper supervision of employees at all times, undertake regular inspections of the workplace, enforce the wearing of safety equipment/clothing and ensure compliance with all relevant rules and procedures. d. Staff should be educated as to the need to refrain from indiscriminate waste disposal and/or pollution of local soil and water resources and receive the necessary safety training. e. The provision and proper utilisation, maintenance and management of toilet, wash and waste facilities for staff during construction must be ensured. f. Machine and vehicle operators should receive clear instructions to remain within demarcated access routes. g. Suitable control measures over the contractor's yard, plant and material storage to mitigate any visual impact of the construction activity must be implemented. h. Contractors must adhere to normal working hours (from 7h00 to 18H00) and from Monday to Saturday (not on Sundays and public holidays) and ensure that all machinery is in a good state of maintenance to mitigate noise. i. All employees must undergo the necessary safety, health and environmental training from the contractor, proponent and project manager and wear the necessary protective clothing. The following information was obtained from NamWater: • You may only work on weekends and after hours with the consent of the scheme supervisor.

5.2.8. Health	
Responsible Person	**Measures**
RE, NEM and Contractor	a. The workforce should receive an induction course on awareness and spreading of diseases and illnesses. b. The workers should be informed that prevention is better than cure.

	c. Condoms should be made available to the workers. d. A first aid kit should be available on site and personnel should be trained in first aid. e. The Ministry of Health and Social Services can be consulted to inform the workers of the dangers regarding the diseases and illnesses. f. The negative impacts/aspects of common diseases and illnesses should be discussed and the workers should know the dangers regarding the diseases for instance sickness, loss of energy, etc. • The following information was obtained from NamWater:Drink lots of clean water every day. • Use toilets that have been provided. • Take the necessary precautions to avoid contracting HIV / AIDS. Condoms are available at most Clinics. • Inform your scheme supervisor when you are sick. • Do not work with any machinery when you are sick. • If you are working in malaria areas, you must take the necessary precautions.

5.2.9. Movement and Service of Construction Vehicles and Trucks	
Responsible Person	**Measures**
RE, NEM and Contractor	a. Vehicles that transport materials to and from the site must be road worthy. b. All drivers that transport materials must have a valid driver's license and must at all times adhere to traffic rules and regulations. c. Vehicles carrying loads must be properly secured in order to completely avoid items falling off the vehicle at any time.

	d. The materials used in the construction process for example cement, bricks, poles, etc., must be stored at a central storage area on the site in order that the site be neat and orderly and to avoid a situation where materials are lying all over the place. e. Fuels, paints, solvents and chemicals must be stored in watertight containers to avoid leakage that can cause environmental pollution. f. Any haphazard driving of any vehicles on the site where there are no existing routes must be avoided. g. Minimize the use of fix routes that will reduce the visual impact and decrease the need for the rehabilitation of tracks. h. Vehicles, trucks and earthmoving equipment with headlights must switch their headlights on at all times. i. No vehicles or trucks that move in the area may exceed 40km/h with warning, and speed signs must be positioned at relevant locations. j. No littering is allowed along the road, dumping of waste and scrap, etc. and all drivers must be made aware of this. k. Daily or weekly visual checks are required and all drivers must be supervised. l. The safety of surrounding residents and land users, other motorists and animals should not be compromised by the vehicle associated with the constructional operation. The following information was obtained from NamWater: • Tracks and roads should be kept to a minimum. Where possible follow existing roads. • No off-road driving is allowed. • Never drive any vehicle without a valid license for that vehicle class and do not drive any vehicle that is not road-worthy. • Never drive any vehicle when under the influence of alcohol. • Always keep your headlights on when driving on dusty roads.

	• Keep to the roads as specified by your SCHEME SUPERVISOR. Vehicles may only be driven on demarcated roads. Drivers should always use three point turns, "u-turns" are not allowed. Do not cut corners. • Do not drive on rocky outcrops.

5.2.10. Safety and Security	
Responsible Person	**Measures**
RE, NEM and Contractor	The following safety and security measures should be followed on the construction camp site and on the pipeline route. The following guidelines were obtained from NamWater: • Only enter and exit roadways and maintenance areas at demarcated entrances. • Wear protective clothing and equipment as per signboards at the Scheme and according to instructions from your scheme supervisor. • Report to your scheme supervisor if you see a stranger or unauthorized person in the maintenance area. • Never enter any area that is out of bounds or that is demarcated as dangerous without permission of your scheme supervisor. • Never climb over any fence or enter private property without permission of the landowner or your scheme supervisor. • Do not remove any vehicle, machinery, equipment, or any other object from the maintenance site without the permission of your scheme supervisor. • Keep clear of blasting sites. Follow the instructions of your scheme supervisor. • Never enter or work in the Scheme while under the influence of alcohol or other intoxicating substances. • All staff should know the emergency procedures in case of accidents.

5.2.11. Emergency Plan and Fire Prevention/control	
Responsible Person	**Measures**
RE, NEM and Contractor	• The emergency plan and guidelines for firefighting during construction activities (with consideration of air, groundwater, soil and surface water) include the following:All pollution incidents must be reported to the relevant authorities within 24 hours of occurrence. Record(s) of environmental related incidents should be maintained. • Due to the flammable nature of the products to be handled and stored on site, there exist an opportunity for a fire/explosion due to the presence of vapours. • Smoking must be prohibited in the vicinity of flammable substances. • The availability of sufficient firewater tie-in points, fire extinguishers and requirements of Local Authorities must be ensured. • Any welding or other sources of heating of materials should be done in a controlled environment and under appropriate supervision, in such a manner as to minimise the risk of fires and/or injury to staff. • Training should be provided to the staff members in the use of the appropriate firefighting equipment. • There should be close co-operation with the local fire authority to ensure that they know the layout of the facility, what equipment and facilities are available, where they are located, and how they are used. • The following information was obtained from NamWater:Do not make open fires, use a drum or tin and do not collect any vegetation to burn.

	• Do not smoke or make fires near refuelling depots or any other area where fuel, oil, solvents, or paints are used or stored. Fireplaces should be at a safe distance from fuel and explosive storage sites as well as vehicle parking sites. • Cigarette butts should always be thrown in allocated refuse bins. Make sure that the cigarette butt is out before throwing it into the bin. • Immediately notify your SCHEME SUPERVISOR if you see an unsupervised fire at the campsite or maintenance site.

5.2.12. Preparation of Pipeline Route	
Responsible Person	**Measures**
RE, NEM and Contractor	a. Clearance of the pipeline route will need to take place. Clearance of vegetation should be done in an environmentally friendly manner namely minimum vegetation should be cleared for construction and revegetation should take place. b. The preparation of the construction and service roads should be done with minimal disturbance to the surroundings and limited vegetation should be removed. Only the necessary land should be cleared for the roads. c. The pipeline trench should be constructed in a way that does not impact on wildlife, the neighbouring activities and the surrounding natural environment. d. Blasting should be carried out with minimal disturbance to the environment and to neighbours. Neighbours should be notified before any blasting will be carried out. Blasting notice boards should be erected at the site to warn people/tourists that may drive past the site. Blasting should only take place when necessary.

5.2.13. Construction of the Pipeline	
Responsible Person	**Measures**
RE, NEM and Contractor	a. The construction and rehabilitation of the pipeline, manholes and pump stations should carried out in an environmental friendly manner namely only the necessary land that is needed should be cleared and used for the activities. No waste construction material should be left on the site and vegetation should not be destroyed if not needed. b. Solid waste that is produced during construction along the pipeline route should be managed and transported to the landfill weekly. Waste should be stored in close containers to prevent it being blown into the receiving environment. c. The closing and covering of the pipeline trench should be done with the sand and stone that was removed to prepare for the trench. If additional sand and stone is required; it should be obtained from adequate and licensed sources that have a permit and an environmental clearance to supply the materials. d. The pipeline route and trench should then be restored to its natural state in order to avoid it being a negative visual impact for persons driving past the site or visiting the area.

5.2.14. Decommissioning of the Existing Pipeline	
Responsible Person	**Measures**
	a. The decommissioning of the existing pipeline and the associated infrastructure should be carried out without any harm to the environment.

RE, NEM and Contractor	b. All outdated and damaged materials should be removed from the site to the required landfill site. c. If storage of the waste materials is required, it should be done within a closed container to prevent persons from entering the storage site or wind being able to blow particles into the surrounding and receiving environment.

5.2.15. Decommissioning of Construction Camp	
Responsible Person	**Measures**
RE, NEM and Contractor	a. The entire construction camp should be decommissioned after the completion of the construction activities. b. The construction camp should be cleaned namely all waste and construction materials should be removed from the site. c. The site should return to its original state namely the state before any material was brought to the site. d. No sand and stone heaps should remain, the site should be levelled and trenches should be filled where required. e. No domestic, solid or construction waste should remain on the site after the site is decommissioned.

5.2.16. Preventing Pollution	
Responsible Person	**Measures**
RE, NEM and Contractor	• The following information was obtained from NamWater:Only work with hazardous materials in bunded areas. • Never discard any hazardous substances such as fuel, oil, paint, solvent, etc. into stream channels or onto the ground. Never allow any hazardous substances to soak into the soil. • Clean up spills immediately.

	• Immediately report to your scheme supervisor when you spill, or notice any hazardous substance overflow, leak or drip or spill on site, into the streambeds or along the road. • Immediately report to your scheme supervisor when you notice any container, which holds hazardous substances overflow, leak or drip. Spillage must be prevented. • Only wash vehicles, equipment and machinery, containers and other surfaces at work site areas designated by your scheme supervisor. • Do not change oil on uncovered surfaces. • If you are not sure how to transport, store, use, or get rid of any hazardous substances ask your scheme supervisor for advice.

5.2.17. Noise Disturbance	
Responsible Person	**Measures**
RE, NEM and Contractor	a. The construction contractor must ensure that construction and other noise generating activities are restricted to normal working hours, unless otherwise approved in consultation with I&APs. b. Ensure that equipment is in a good state of maintenance, during construction and operational phase to prevent noise. c. The contractor, proponent and project manager during construction must ensure the correct layout of the site to address the potential noise impact from the facility. d. Staff should not make excessive noise especially during late hours. e. Equipment used in the operation of the facility must be kept in good state of maintenance so that noise is minimised. The following guidelines were obtained from NamWater: • Keep noise levels as low as possible.

	• Do not operate noisy equipment outside normal working hours.

5.2.18. Dust	
Responsible Person	**Measures**
RE, NEM and Contractor	a. The impact of dust on the air quality in general and on the fauna and flora must be limited. Dust can be limited by spraying grey water on the gravel roads that will be used. b. The general speed limit on the haul road and construction site must be kept below 40km/h to limit dust generated by construction traffic. c. There must be daily visual monitoring of transport activities and dust generation in the area. If dust becomes an issue, dust suppression is required. It is also recommended that in months for instance August and September when winds are extreme, that construction is limited and traveling on the gravel roads should be minimized. Since limited vegetation is present in the area and neighbouring activities are few, dust is not believed to be a nuisance. The following information was obtained from NamWater: • Do not make any new roads or clear any vegetation unless instructed to do so by your SCHEME SUPERVISOR. • Keep to established tracks and pathways. • Keep within demarcated work areas.

5.2.19. Waste Management	
Responsible Person	**Measures**

RE, NEM and Contractor	a. Should the contractor and sub-contractors make use of combustible waste, for example empty cement bags, it must be burnt in a drum and the necessary care must be taken to avoid any possibility of starting a veldt fire. b. All non-combustible waste must be removed from the site at least once a week. c. Any waste that is stored temporarily on the site must be secured in refuse bags stored in a fenced in area to avoid it being blown into the veldt. d. Measures must be taken to ensure waste bins can seal/close properly to avoid scavengers for example jackals or vultures from opening the bins. e. All waste must be dumped at a properly managed rubbish dump site. f. No paint, solvents, thinners, diesel, oil or any other harmful substances may be poured onto the ground. The substances must be collected in containers and be removed from the site and transported to a registered landfill site. The following guidelines were obtained from NamWater: • Learn the difference between different types of waste, namely: - general waste, and - hazardous waste. • Containers will be provided for different types of wastes. - **General Waste** includes waste paper, plastic, cardboard, harmless organic (e.g. Vegetables) and domestic waste - **Hazardous Waste** includes objects, liquids or gases that are potentially dangerous or harmful to any person or the environment. Sewage, fuel, tyres, diesel, oils, hydraulic and brake fluid, paints, solvents, acids, soaps and detergents, resins, old batteries, etc. are all potentially hazardous.

	• Learn how to identify the containers for the different types of wastes. Only throw general waste into containers, bins or drums provided for general waste. • Recycle drums, pallets and other containers. • Never bury or burn any waste on site, all waste is to be disposed in allocated refuse disposal containers, bins or bags. • Never overfill any waste container. Inform your Contractor if you notice a container that is nearly full. • Do not litter. • Do not bury litter or rubbish in the backfill trench.

5.2.20. Water Use	
Responsible Person	**Measures**
RE, NEM and Contractor	a. Water must at all times be used sparingly in the construction period as well as in all the other phases. b. All valves, pipes and tanks that will be used or constructed must be maintained and managed so that they do not leak. c. Weekly visual checks on possible spillages must be conducted. d. Effluent water from washing facilities must be disposed of in a temporary sewage system. The establishment of the system should be safe to avoid pollution to the environment and the area where the system was used will be rehabilitated after the completion of the project. e. There must be weekly inspections of sewage systems and drains. f. The workforce must be advised to use water sparingly for human consumption. g. Water consumption must be checked on a three monthly basis. The following information was obtained from NamWater: • Always use as little water as possible. Reduce, re-use and recycle water.

	• Never leave taps or hose pipes running. Close all taps after use. • Report any dripping or leaking taps and pipes to your scheme supervisor.

5.2.21. Wildlife	
Responsible Person	**Measures**
RE, NEM and Contractor	a. No wild animals on the site may be trapped or killed for any reason whatsoever by the workers or contractors. Perpetrators will be handed to the authorities. Wildlife corridors or bridges should be implemented where possible in order to enable wildlife to migrate to different areas.

5.2.22. Vegetation	
Responsible Person	**Measures**
RE, NEM and Contractor	a. There must be an overall preservation of vegetation communities to ensure minimal disruption of important vegetation communities and valuable plant specimens. b. At all times, clearance of vegetation for firewood must be avoided. c. Alternative fuel and/or power sources must be made available namely paraffin stoves and diesel-driven generators if workers are accommodated on the site. d. No protected or endangered trees or shrub species may be harmed or be removed without the required procedures and licenses. e. Daily inspections must be carried out and weekly checks whether the stock of alternative energy sources is sufficient. f. The developers or constructors must ensure the maximum use of local plant material for rehabilitation processes namely the areas where vegetation was removed will have to be re-vegetated.

	g. Before new site construction begins, the upper level of the soil must be stripped and stockpiled separately so that this layer can be utilized in the rehabilitation process. The upper level to be retained should be 10cm deep. The soil can be stored next to the project site and be replaced as soon as the construction is completed. The soil should be covered with a covering to prevent being blown away by wind. The process can be done either by hand or by a grader and the soil can be replaced either by hand or by a grader. Soil should preferably not mix with the other layers of soil; however it is not believed that the mixing of soils will cause destruction to the environment. h. There must also be a visual check on the wind erosion on a monthly basis. The following information was obtained from NamWater: • Do not ever pick any plants. People caught with plants in their possession will be handed to the authorities for prosecution. • Keep off the rocky outcrops unless given specific permission by the Resident Engineer and NamWater Environmental Manager (NEM) to be there. • Never cut down any tree or branches for firewood. • Never leave rubbish or food scraps or bones where it will attract animals, birds, or insects. • Rubbish must be thrown into allocated waste disposal bins/bags. • Always close the gates behind you.

5.2.23. Fauna	
Responsible Person	**Measures**
RE, NEM and Contractor	a. No hunting and trapping of wildlife will be allowed on the site. b. Never feed, tease, play with, or set devices to trap any animal or livestock. Wild animals are not to be domesticated.

	c. The developers or contractors must fence off waste pit storage areas to prevent wildlife from falling in or getting entangled in waste. d. The fences must be sufficient to control the access of large/small animals. e. There must be a weekly visual check of the fences and staff must report to the managers.

5.2.24. Historical, archaeological and cultural heritage	
Responsible Person	**Measures**
RE, NEM and Contractor	a. The contractor, project manager and his sub-contractors should request a qualified archaeologist to examine the area before construction in undertaken. Any artefacts should be removed or relocated by the archaeologist. b. If any archaeological or cultural heritage sites are found on the site, the manager must advise the National Monuments Council to ensure that steps are taken for the preservation of the site or artefacts. The following information was obtained from NamWater: • If you find any archaeological, cultural, historical or pre-historical object on the maintenance site you must immediately notify your Resident Engineer and NEM. • Never remove, destroy, or disturb any cultural, historical, or pre- historical object on site. • Cultural and Historical Objects include old buildings, graves or burial sites, milestones, old coins, beads, pottery and military objects. • Pre-Historical objects include fossils and old bones, old human skeletal remains, pieces of pottery and old tools and implements.

5.2.25. Stormwater Damage Prevention	
Responsible Person	**Measures**
RE, NEM and Contractor	a. Stormwater Management: uncontrolled surface and stormwater runoff that has been polluted with petroleum/diesel products has the potential to impact negatively on the surrounding environment if not managed properly. A stormwater management plan should be followed: b. Serious financial and environmental impacts can be caused by unmanaged stormwater. c. To prevent stormwater damage, the increase in storm water runoff resulting from the construction activities must be estimated and the drainage system accessed accordingly. A drainage programme must be submitted to the Engineer for approval. d. During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the Engineer. e. Temporary cut-off drains may be required to capture stormwater and promote infiltration, or to divert stormwater flow to avoid gulley erosion. f. Maintenance of Water Quality: Incorrect disposal of substances and materials and polluted run-off can have serious negative effects on groundwater quality. g. Storage areas that contain hazardous substances must be bunded with an approved impermeable liner. h. Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimise pollution risk and reduced bunding capacity. i. A designated, bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of to a suitable waste site or as directed by the Engineer. j. Provision should be made during set up for all polluted runoff to be treated to the Engineers approval before being discharged into the stormwater system (this will be required for the duration of the project).

5.2.26. Visual Impacts	
Responsible Person	**Measures**
RE, NEM and Contractor	a. Waste and stockpile dumps must not be visible from the road or to neighbours. b. The developer must ensure that all structures are painted a natural colour to blend with the surrounding landscape. c. The design proposed in the planning phase must be adhered to and implemented to ensure that the development is in harmony with the surrounding natural environment.

5.2.27. Rehabilitation of site after completion of construction phase	
Responsible Person	**Measures**
RE, NEM and Contractor	a. All unwanted and unneeded materials and domestic waste on site must be collected and transported to a recognised disposal facility. b. Monitoring must be conducted when grasses are flowering. c. Upon the completion of all construction activities, remove workshops, surrounding fencing, generators and any scrap materials in the vicinity of the work area. d. Seal all petrol, diesel, oil and grease containers and remove it from the site to a recognised storage facility. e. Break up all unnecessary concrete slabs and structures on the site and transport the fragments to a suitable site for disposal. All rehabilitated areas must be monitored over a 4 year time period from the onset of the rehabilitation procedures. (The frequency of monitoring suggested is dependent on satisfactory performance. If however the requirements are not being MEFT, the frequency of the monitoring must be increased).

There must be photographic evidence at different rehabilitated places with a camera providing dates on the prints. These photographs must be taken every year around the same period at the same places.

5.3. THE OPERATIONAL PHASE

Steps to be taken in the daily management and running of the operations and activities are stated in the following section. To ensure that the activities are operated on an environmentally sustainable manner the following **general guidelines** are included in the EMP:

a. The operations must be managed with minimal disturbance to the surrounding natural environment.
b. It must be ensured that visitors to the site behave in an appropriate manner that does not impact negatively on the environment.
c. The conservation of the natural and human environment must be regarded as high priority.
d. An “environmental friendly behaviour” must be cultivated and maintained amongst all people involved in the operations.
e. The entire operation on the site must ideally conform to the standards usually ascribed to “eco-tourism”.
f. The job description for the manager must include his/her responsibilities and duties towards the implementation and adherence to the EMP.

The following specific environmental management issues which require daily operational attention from management and staff are included in the EMP:

5.3.1. General Regulations	
Responsible Person	**Measures**
Scheme Supervisor and NEM	a. No waste of any kind may be burned at the site. b. All the chemicals used to clean the surfaces namely basins, floors, tables, etc., must be biodegradable.

5.3.2. Water Management	
Responsible Person	**Measures**
Scheme Supervisor	a. All pipes must be well maintained and leaks must be repaired immediately.

5.3.3. Community Relations	
Responsible Person	**Measures**
Scheme Supervisor and NEM	b. The proponent and personnel must have sound relations with neighbours in the vicinity of the site. c. They may not damage any cultural or archaeological sites.

	d. The manager must employ as many local people as possible for all levels of operation. e. They must make use of dispute resolution Methods and labour practices that are within the law and cultural norms. f. Staff must be trained in order that they have the knowledge to do their work properly. g. The manager must provide opportunities for career advancement and skills development.

5.4. DECOMMISSIONING/CLOSURE PHASE

The decommissioning phase follows the operational phase. This is a site-specific plan developed to ensure that appropriate environmental management practices are followed during the decommissioning phase of this project and to detail remediation, site control, and monitoring activities that will continue once the project/infrastructure is no longer required/needed.

The decommissioning phase:

- Provide effective, site-specific, and implementable procedures and mitigation measures to monitor and control environmental impacts throughout this phase of the project, such that the related activities do not adversely impact amenity, traffic, or the environment in the surrounding area.
- Establish long-term management of the project site for its next intended use, detailing plan for site assessment, remediation of contamination, and ecological restoration activities.
- Eliminate the long-term liability issues related to the site for the proponent or owner of the facility or project site.

The decommissioning/closure of this specific project is not anticipated. However, should this be required for any reason, the following conditions are generally required.

5.4.1. Equipment	
Responsible Person	**Measures**
Scheme Supervisor and NEM	a. Prior to the infrastructure being destroyed, all residue products must be carefully removed for recycling or safe disposal. b. Solid materials must be used for backfilling. Sand, stones and rocks should be used for filling purposes.

5.4.2. Spillage	
Responsible Person	**Measures**
Scheme Supervisor and NEM	a. Spillages during the decommissioning must be reported to the relevant authorities. b. Spillages should be cleaned by digging up the entire spill and disposing of it at a registered land fill site. c. Any spillages of potentially toxic materials, whether by accident or through negligence, must be reported and the corrective action must be undertaken to 'clean' and to remove the evidence of the spillage. d. The sand/gravel where the spillage occurred should be removed and transported to a registered land fill site.

5.4.3. Remediation	
Responsible Person	**Measures**
Scheme Supervisor and NEM	a. Clean-up or remediation of any contamination must be done. b. The owner of the land, the person in control of land or the person who occupies or uses the land on which pollution has occurred is not absolved from the responsibility of any further and/or associated pollution arising from this property. c. Should there be a risk to downstream users or the environment from this site in the future, it would be requested that further remedial measures be instituted at this site.

6. ENVIRONMENTAL STATEMENT/AGREEMENT

After all assessing was done and information available was reviewed, the conclusion was reached that the site allocated to NamWater namely for the proposed upgrading and replacement of the water pipeline from Naute Dam to Keetmanshoop, //Kharas Region is suitable to be used as it will have a low significance impact rating. The activities associated with the operations will exert a general low impact on the environment and are easily manageable as long as the impact on the environment is mitigated through the implementing of the Environmental Management Plan (EMP) as proposed in this document. Management actions prescribed and recommended in this EMP are especially designed to minimize or manage the impacts exerted by the activities.

It should, however, be noticed that the management activities should further be strengthened with continuous and well-orchestrated monitoring of the implementation of the given EMP. The manager on the site needs to understand the severity of the situation and all efforts should be made to ensure that the message is conveyed to the workforce and customers.

It should further be noted that the proposed EMP will have little or no value in managing the impact of the operations on the environment if it is not implemented by the proponent and not monitored by the responsible authorities. It is thus suggested that the level of implementation of the EMP is audited at regular intervals by the Environmental Control Officer of the MEFT or Tourism Board in order to ensure that remedial actions are taken on time and on a continues basis.

MEFT is herewith requested to accept and approve the EMP for the proposed upgrading and replacement of the water pipeline from Naute Dam to Keetmanshoop, //Kharas Region and to issue the site with an Environmental Clearance Certificate.

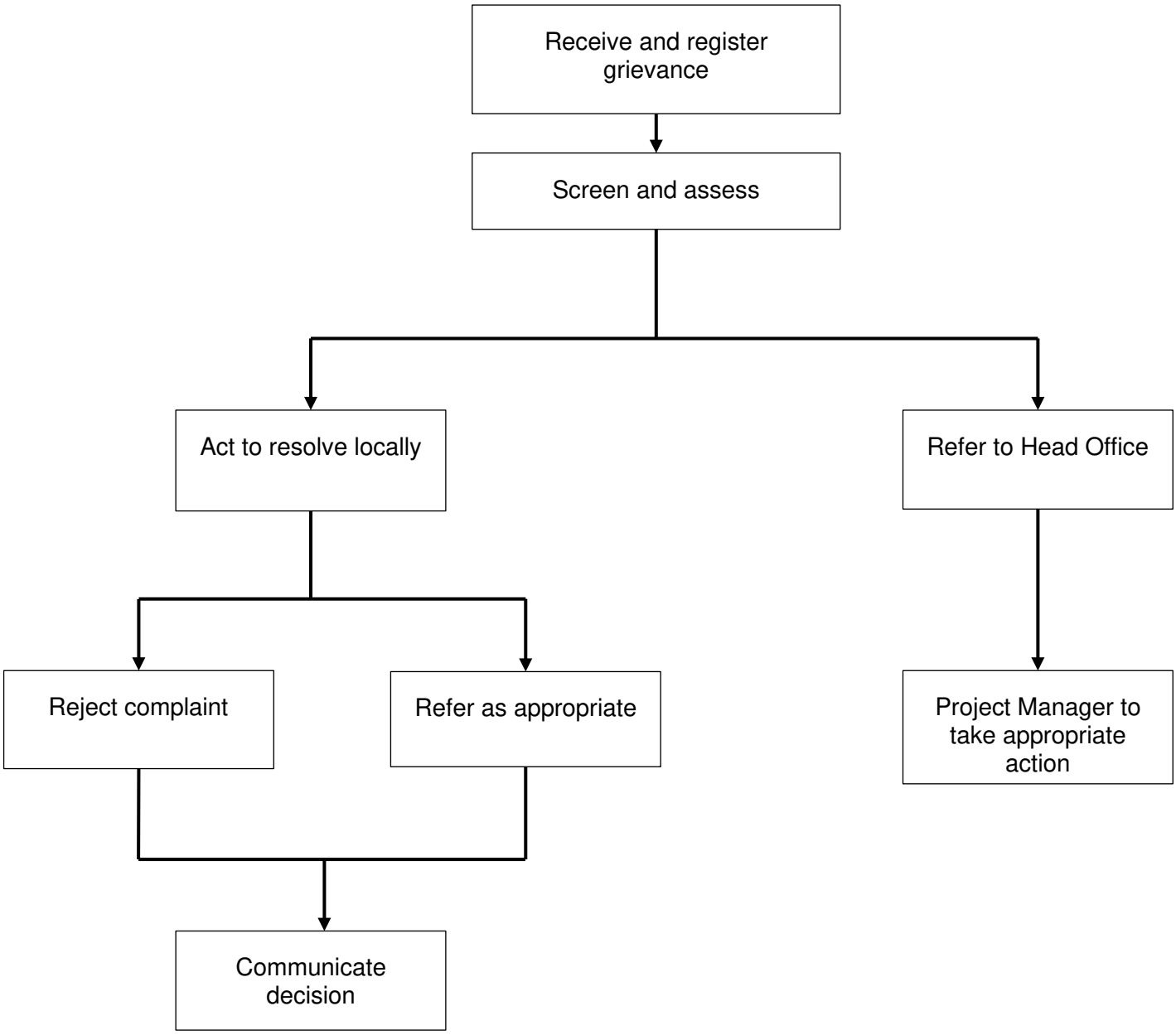
7. GRIEVANCE PROCEDURES AND CONTRACT

A grievance complaint is a formal employee complaint that is an accusation of a violation of workplace contract terms or policies.

Contact person and number when misconduct is detected: - ***Namibia Water Corporation*** - *Applied Scientific Services* - Mrs. Jolanda Kamburona - Cell: +264 81 144 1528 - Tel: +264 61 712 105 - E-mail: KamburonaJ@namwater.com.na Contact Mrs. J Kamburona when misconduct is detected on site as soon as possible.
Photos of the misconduct can be sent to Mrs. Kamburona.
Misconduct should be reported to prevent loss or damage.
The grievance can be raised by the public, farmers, tourists, customers, competitors or suppliers etc.
Please indicate the following when a complaint is lodged: who is involved in the incident (name of person if possible to obtain name), what happened, where did the incident occur, when did the incident occur (time/date), why is it described as grievance, how can the issue be resolved, name of person the grievance is against and the person filling the grievance and any facts related to the grievance.

Proposal:

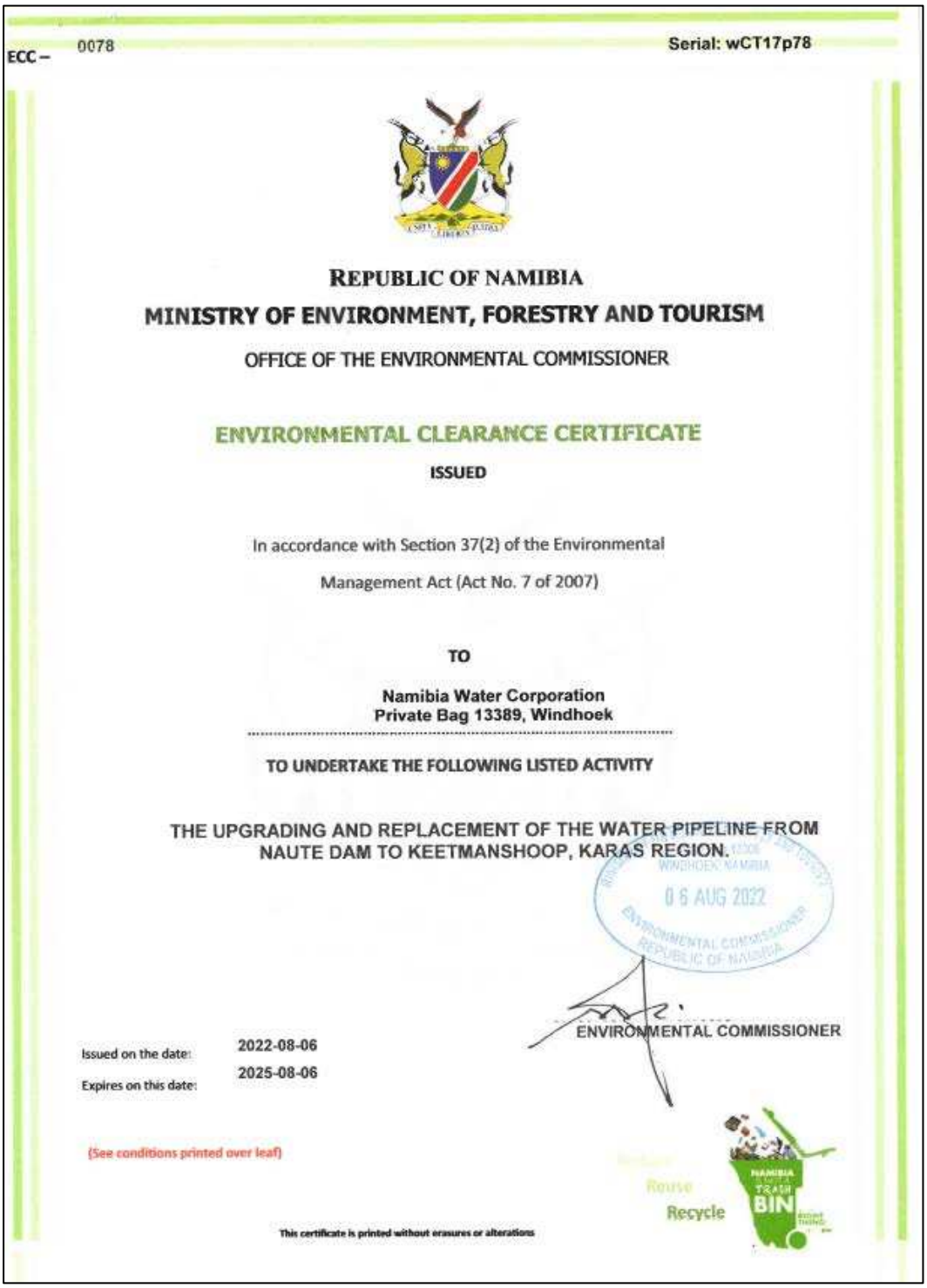
Annexure 1: Grievance Procedure



Grievance Registration

Grievance Registration	
Case No:	Date:
Name of complainant:	Cell no:
	Email address:
Details of grievance: (Date, location, persons involved, frequency of occurrence, effects of ensuing situation, photographic evidence, etc)	
Name of person recording grievance:	Cell number:
Proposed date of response:	
Signature of recording person:	Signature of complainant:
Date of redress:	
Decision and action:	

8. Naute-Keetmanshoop Environmental Clearance Certificate



ECC – 0078 Serial: wCT17p78

REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

ENVIRONMENTAL CLEARANCE CERTIFICATE

ISSUED

In accordance with Section 37(2) of the Environmental Management Act (Act No. 7 of 2007)

TO

Namibia Water Corporation
Private Bag 13389, Windhoek

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

THE UPGRADING AND REPLACEMENT OF THE WATER PIPELINE FROM NAUTE DAM TO KEETMANSHOOP, KARAS REGION.

WINDHOEK NAMIBIA
06 AUG 2022
ENVIRONMENTAL COMMISSIONER
REPUBLIC OF NAMIBIA

ENVIRONMENTAL COMMISSIONER

Issued on the date: 2022-08-06
Expires on this date: 2025-08-06

(See conditions printed over leaf)

Reuse Recycle

NAMIBIA WATER TRASH BIN

This certificate is printed without erasures or alterations

9. LIST OF REFERENCES

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