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ENVIRONMENTAL MANAGEMENT PLAN

FOR

ENVIRONMENTAL IMPACT ASSESSMENT (SCOPING REPORT AND EIA & EMP) FOR THE ENVIRONMENTAL CLEARANCE CERTIFICATE FOR THE TEMPORARY WATER PIPELINE FROM THE RÖSSING PIPELINE VIA FARM WEIZENBERG TO THE ETANGO MINE SITE DURING CONSTRUCTION

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1 INTRODUCTION

Bannerman Mining Resources (Namibia) (Pty) Ltd (Bannerman) has an Environmental Clearance Certificate (ECC01608) for the proposed mining and associated activities at the Etango Project. As the permanent pipeline will not be in place to provide water for construction of the mine infrastructure at the Etango Project site a temporary water pipeline needs to be placed from the Rössing pipeline take-off to the Etango Project site (see **Figure 1**).

This EMP sets out a series of management plans which are designed to meet legal requirements and avoid or minimise the impacts associated with the construction and operation of the temporary.

The management plans have been compiled based on a review of the findings and recommendations of the EIA report for the proposed temporary water pipeline.

1.1 Keeping EMPs up to date

It is the intention that this EMP should be seen as a "living document" which will be amended during the operation, as the activities might change or new ones be introduced.

1.2 Details of the Persons Who Prepared This EMP

ASEC, the independent firm of consultants who undertook the EIA has also compiled this EMP. Details of the Environment Assessment Practitioners are provided in the main (EIA) report.

2 LEGAL REQUIREMENTS

A summary of the applicable legislation can be found in **Section 5** in the main (EIA) report.

2.1 Permits and Rules

As stipulated in the EIA Regulations, No.30 of 2012, the Environmental Clearance Certificate (ECC) needs to be obtained from MEFT:DEA before the commencement of the Project.

Additional permits, which need to be in place and be obtained by Bannerman are -

Labour Act 11 of 2007:

Regulations relating to the health and safety of employees at work are contained in GN 156/1997 (GG 1617). Must be complied with on this project.

Forestry Act No 12 of 2001, Forest Amendment Act, No. 13 of 2005:

Section 22 of the Act requires a permit for the cutting, destruction or removal of vegetation that are classified under rare and or protected species. The Act also stipulates that trees, shrubs and bushes within 100 m from a watercourse may not be cut, destroyed or removed without a permit.

National Heritage Act No 27 of 2004:

No archaeological/heritage site or cultural remains may be removed, damaged, altered or excavated. The Chance Find Procedure (see **Appendix H – Archaeology Specialist Study**) need to be applied should any additional remains be encountered.

Park Rules:

The Parks rules need to be adhered to (see **Appendix 1 of the EMP**).

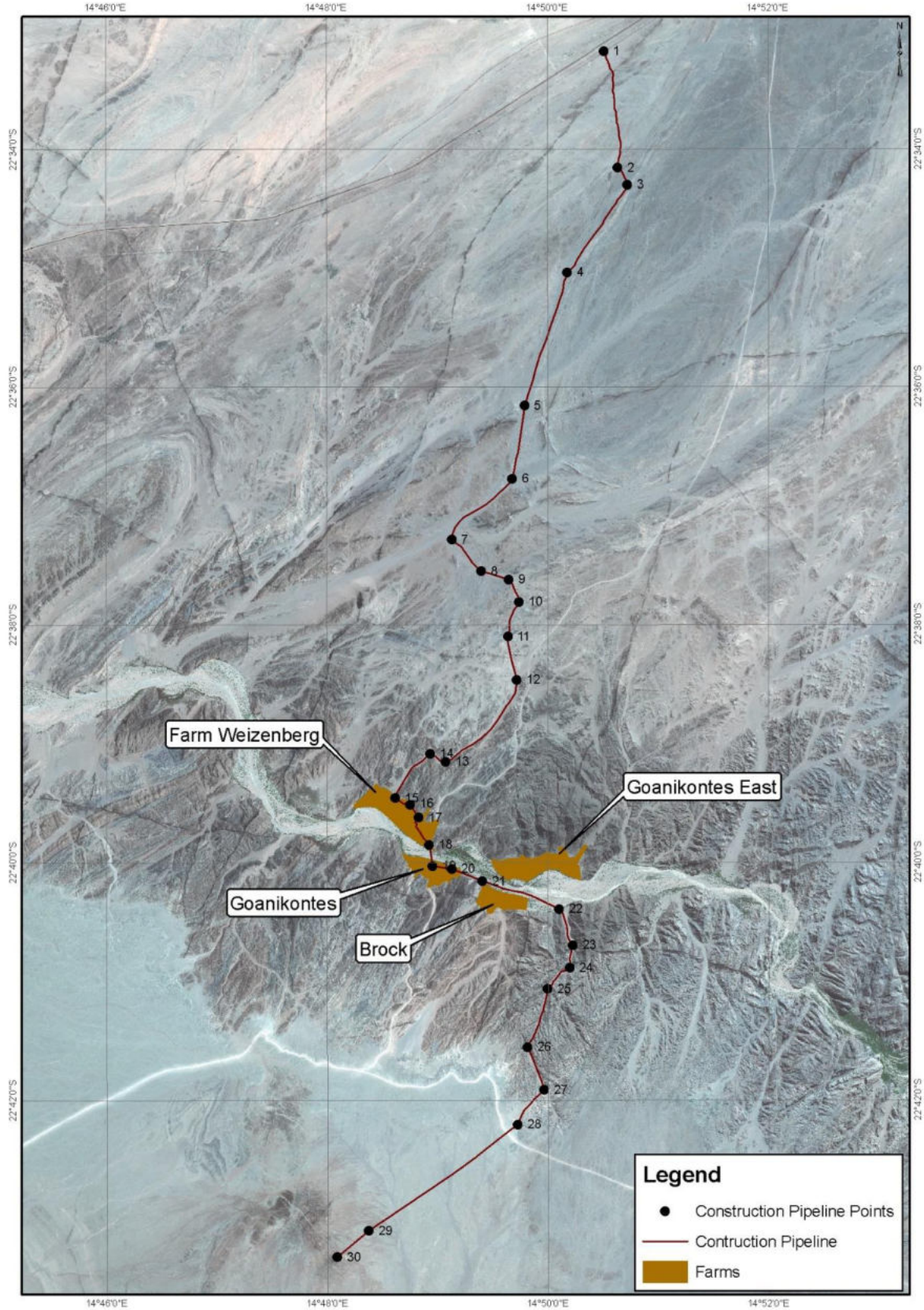

Figure 1: Location of the temporary water pipeline.

3 OVERALL ENVIRONMENTAL OBJECTIVES FOR THE EMP

The following overall environmental objectives have been set for the implementation of the proposed water pipeline Project.:

- To comply with national legislation and standards for the protection of the environment;
- To limit potential impacts on biodiversity through the minimisation of the footprint and the conservation of residual habitat as far as possible;
- To limit contaminated effluent discharge into the environment through the containment and recycling of contaminated water;
- To ensure the legal and appropriate management and disposal of general and hazardous waste, through the implementation of a strategy for the minimisation, recycling, management, temporary storage and removal of waste;
- To support and encourage environmental awareness and responsibility amongst all contractors;
- To ensure all employees and contractors adhere to the park rules;
- To ensure that all the contractors adhere to the relevant management commitments; and
- Ensure compliance to the EMP.

4 GENERAL MANAGEMENT REQUIREMENTS

The following sections list the general management requirements that are relevant to the construction activities of the proposed temporary pipeline.

4.1 Parties responsible for the implementation of the EMP

This section describes the roles and responsibilities for implementing the various management plans (refer to section 5).

4.1.1 Bannerman - Managing Director/ Project proponent

The Managing Director shall ensure compliance to this EMP. The EMP will be part of the contract with all contractors working on the project.

4.1.2 Bannerman – Construction Supervisor

The Construction Supervisor has overall responsibility for environmental management on the construction site for ensuring this EMP is implemented. To assist the Construction Supervisor, it is recommended to appoint an Environmental Officer (or dedicated person responsible for environmental management activities on site) who will be dedicated to managing and monitoring the environmental issues associated with the construction and operation activities of the proposed pipeline.

The Construction Supervisor must ensure the EMP is included in all contracts and to ensure that contractors adhere to the conditions of the EMP, the ECC and other relevant permits.

Contract documents should consider the inclusion of penalties for non-conformance to the EMP, or to link the sign off of the Contract to a retainer clause. The client retains part of the contract fees until the Construction Supervisor has signed off the rehabilitated sites, indicating satisfaction with the rehabilitation of the Contractor's work and laydown area.

The Construction Supervisor shall be responsible for responding to any actual environmental emergencies / incidences that occur within their sections, or as specified in this procedure.

The Construction Supervisor shall also ensure that sufficient financial and human resources are available at short notice to implement emergency procedures, and to take corrective action pro-actively when environmental risks are evident in advance.

4.1.3 Environmental Officer

The Environmental Officer will be responsible for assisting the Construction Supervisor in all environmental issues, and specifically to ensure that the commitments as set out in this EMP are implemented during the construction phase.

In addition to the above, the Environmental Officer is responsible for ensuring that all persons involved during the construction comply with this EMP.

The Environmental Officer will be responsible for the following aspects related to compliance of this EMP:

- Regular inspections and auditing compliance to this EMP and any other relevant legal requirements e.g. permits and authorisations.
- Conduct environmental awareness training during induction training and on an ad hoc basis thereafter.
- Conduct scheduled monitoring as outlined in various sections in the EMP as well as any additional monitoring required by permit and authorisations issued to the temporary water pipeline development by relevant authorities.
- Ensure compliance to this EMP and permits and authorisations issued to Bannerman by relevant authorities. Ensure responsibilities and target dates are developed for each one of the commitments in this EMP.
- Ensure compliance to the Park Rules by all employees and contractors through awareness training, engagement with MEFT: Directorate of Wildlife and National Parks (DWNP), where relevant.
- Submit required information to relevant authorities such as reporting related to monitoring and with regard to compliance with the EMP, permit and relevant authorisations.
- Liaise with the Construction Supervisor and Managing Director on environmental management (when and where required).

4.1.4 Contractors

All contractors and their sub-contractors and employees will be contractually required to comply with the relevant commitments in this EMP.

4.1.5 Auditing Compliance of the EMP

The commitments contained in this EMP will, once an ECC has been obtained, be Bannerman's contractual agreement with the Namibian authorities for sound environmental management. All employees, contractors and sub-contractors and any visitors to site will be expected to comply with the commitments contained herein.

4.1.5.1 Internal Audits and Inspections

The Environmental Officer will conduct internal management audits against the commitments in the EMP. These audits will be conducted every month. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

The Environmental Officer will furthermore conduct daily inspections during construction.

4.1.5.2 External Environmental Performance Assessment

It is suggested that external performance assessments be conducted bi-annually and at the end of the construction phase by an independent qualified Environmental Practitioner.

4.1.6 Reporting / Submission of Information

As a minimum, the following documents will be submitted to the relevant authorities on an ongoing basis:

- The bi-annual environmental report required by the MEFT:DEA will be submitted every six months.
- Report any incidences relating to animals in the Parks to the MEFT.

5 ENVIRONMENTAL MANAGEMENT PLANS

5.1 Safety and security Management Plan

It is essential that safety and security measures are defined and implemented to ensure that the construction site cannot be accessed by unauthorized people.

Issue 1: General (third party) safety and security

- No unauthorized access to construction sites is allowed.

5.2 Flora Management Plan - Construction

Overall Issues and mitigation measures:

- Protect biodiversity
  - ✓ Ensure that no plants are damaged or destroyed during construction Point 1 to 19 and Point 22 to 30, see **Figure 1**).
  - ✓ A permit is obtained to cut vegetation in the Swakop River.
  - ✓ Ensure that as few as possible roots are taken out to ensure regrowth after the pipeline has been removed.
- Limit footprint
  - ✓ Ensure machinery and vehicles only use the existing track along the existing pipeline.
  - ✓ Laydown areas should be kept at as small as possible.
  - ✓ Rehabilitate by closing excavated areas as soon as possible.

5.1.1 Management Measures

Issue 1: Loss of vegetation and associated biota

Mitigation measures:

- Construct the pipeline within the disturbed area of the existing pipeline (Point 1 to 19).
- Within the Swakop River section take a route which needs the smallest cutting of vegetation.
- From Point 22 to 30 place the pipeline on areas where no plants are growing.
- Minimise ground disturbance by stockpiling excavated material in disturbed area adjacent to the existing pipeline.
- Backfill excavated area (Point 1 to 19) immediately upon laying of pipeline and smoothen the surface.

5.3 Fauna Management Plan

Issue 1: Restricted movement of small animals, e.g. tortoises (Point 22 to 30)

Mitigation measures:

- Create crossing section in intervals over the pipeline.
- Monitor the pipeline once in use of trapped animals.
- Monitor if crossings are used. If needed create more crossings.

5.4 Archaeology Management Plan

Issue 1: Chance Find Procedure

Mitigation Measures

The Archaeological Chance Find Procedure (see **Appendix F – Archaeology Specialist Study** and **Appendix 2** of the EMP) covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Action by person identifying archaeological or heritage material:

- If operating machinery or equipment - stop work;
- Identify the site with flag tape;
- Determine GPS position if possible; and
- Report findings to foreman.

Action by foreman:

- Report findings, site location and actions taken to superintendent; and
- Cease any works in immediate vicinity.

Action by Construction Supervisor / Environmental Officer:

- Visit site and determine whether work can proceed without damage to findings;
- Determine and mark exclusion boundary; and
- Site location and details to be added to project GIS for field confirmation by archaeologist.

Action by archaeologist:

- Inspect site and confirm addition to project GIS;
- Advise NHC and request written permission to remove findings from work area; and
- Recovery, packaging and labelling of findings for transfer to National Museum.

5.5 Surface Water Management Plan

Issue 1: Pollution of surface water

Mitigation Measures

- Implement containment and clean-up measures relating to hazardous substance spillages (including hydrocarbons), of applicable.
- All materials, fuels and chemicals will be collected, safely stored in sealed drums on impermeable surfaces within bunded and secured areas. These areas will be designed

to contain 110% of the volume of one or the largest (in a multi drum setup) drum and will be equipped with traps and oil separators to contain spilled hydrocarbons. The used hydrocarbon liquid waste will be provided to third parties for recycling. Related records will be kept.

- All vehicles and machines must be maintained properly to ensure that oil spillages are kept at a minimum.
- Spill trays must be provided if refuelling of construction vehicles is done on site.
- Chemical sanitary facilities must be provided for construction workers. Construction workers should only be allowed to use temporary chemical / permanent toilets on the site. Chemical toilets shall not be within close proximity of any drainage system. Frequent maintenance should include removal without spillages.
- Maintain and implement spill management procedure, including the clean-up of hydro-carbon spills.
- Ad hoc spills will be cleaned up/remediated immediately in line with spillage management procedure.
- Place spill kits in all areas where hazardous substances are dispensed and stored and train staff to use it.

5.6 Soil Management Plan

Issue 1: Soil disturbance/ management (Point 1 to 19)

Mitigation Measures:

- Utilize as much as possible already disturbed areas.
- Limit the disturbance of soils to what is absolutely necessary both in terms of access tracks, laydown areas.
- Topsoil needs to be stored separately to put on the filed in area on top.

5.7 Solid & Liquid Waste (including sewage) Management Plan

General aspects:

- Designated waste containers will be established along the construction route. Receptacles must have lids to prevent wind borne litter, or scavenging by animals.
- Recyclable waste will be sent to a reputable recycling company. The remainder of the waste will be disposed at a licenced landfill site off site
- Non-recyclable waste will be collected and taken to an off-site waste facility.
- Keep record of safe disposal of waste.

Issue 2: Collection, storage and disposal of hazardous waste

Mitigation Measures:

- Hazardous waste will be collected in designated waste bin.
- Hazardous waste will be disposed of at a permitted hazardous waste disposal site (Walvis Bay).
- Keep record of safe disposal of waste.

APPENDIX 1 – PARKS RULES

It is against the law to:

a) Be in possession of an unsealed or loaded firearm;

b) Bring into the Park any pets, domestic or otherwise;

c) Leave a rest camp before sunrise or reach it after sunset, or cross the borders of the Park between sunset and sunrise;

d) Make fires at places other than the officially designated fire-places or make excessively large fires;

e) Stay overnight at any place other than a rest camp;

f) Throw away burning or smouldering objects or leave them at places where they may ignite something;

g) Drive at places other than roads marked by official road signs;

h) Kill, injure or needlessly disturb any wild animal;

i) Pick, collect, uproot or disturb any flower, shrub, herb or any other plant;

j) Damage or spoil any object in the park;

k) Leave the rest camp in any other way than in a vehicle, or leave or hang out from the vehicle in any other place than in a rest camp or an assigned camping site;

l) Throw away refuse or rubbish, except at places or in the receptacles provided for the purpose;

m) Make a noise which may disturb other people;

n) Drive or park in the Park in such a way that it may constitute a nuisance, disturbance or inconvenience to other people, or drive faster than the official speed limit;

o) Enter the Park in an open vehicle or on a deck of a motor truck not fitted with a grid cage or other effective protection;

p) Ignore the lawful instructions of MET Park officials;

q) To hitch-hike;

r) To use the tourists' facilities, i.e. swimming pool, etc. Park warden/ official need to be notified for any new drilling activities.

The visit/work to this Park is at your own risk and the Ministry of Environment and Tourism will not be held liable for any injuries, damage or losses you or your possessions may sustain.

All other park rules and regulations must be adhered too.

APPENDIX 2 – ARCHAEOLOGICAL CHANCE FINDS PROCEDURE

Areas of proposed development are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found in the course of development work.

Personnel and contractor heritage induction is intended to sensitize people so that they may recognize heritage "chance finds" in the course of their work. The procedure set out here covers the reporting and management of such finds.

The "chance finds" procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

The "chance finds" procedure is intended to ensure compliance with the relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): " a person who discovers any archaeological …. object ……must as soon as practicable report the discovery to the Council".

The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field. Please note that the Chance Finds Procedure is NOT a substitute for archaeological assessment.

Both Namibian and international standards (e.g. IFC Guidance Note and IFC Performance Standard on Heritage, 2012) require professional archaeological assessment. The Chance Finds Procedure is intended to assist the developer in following the right course of action when archaeological remains are encountered such as during earthmoving operations.

RESPONSIBILITIES

Operator: To exercise due caution if archaeological remains are found

Foreman: To secure site and advise management timeously

Superintendent: To determine safe working boundary and request inspection

Archaeologist: To inspect, identify, advise management, and recover remains

PROCEDURE

Action by person (operator) identifying archaeological or heritage material a) If operating machinery or equipment: stop work b) Identify the site with flag tape c) Determine GPS position if possible d) Report findings to foreman Action by foreman a) Report findings, site location and actions taken to superintendent b) Cease any works in immediate vicinity

Action by superintendent a) Visit site and determine whether work can proceed without damage to findings b) Determine and mark exclusion boundary c) Site location and details to be added to AH GIS for field confirmation by archaeologist

Action by archaeologist:

a) Inspect site and confirm addition to AH GIS

b) Advise NHC and request written permission to remove findings from work area

c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains:

a) Actions as above

b) Field inspection by archaeologist to confirm that remains are human

c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed