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ECC DOCUMENT CONTROL: ECC-82-156-02-A

Environmental Management Plan

Expansion of Katima Mulilo UNAM Campus

December 2018

PO BOX 91193 Windhoek Namibia
Environmental Compliance Consultancy CC
CC/2013/11404

TITLE AND APPROVAL PAGE

Project Name:	Expansion of Katima Mulilo UNAM Campus
Client Name:	University of Namibia (UNAM)
Ministry Reference:	MET
Status of Report:	Final for Government record of decision
Date of issue:	18th December 2018
Review Period	N/A

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ENVIRONMENTAL COMPLIANCE CONSULTANCY

DECLARATION OF INDEPENDENCE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, **Stephan Bezuidenhout**, declare that –

General declaration:

- I act as the independent environmental practitioner in this application/tender
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations

1st January 2018

SIGNATURE **DATE**

EXECUTIVE SUMMARY

UNAM has identified the need to create a facility for the Department for Wildlife Management and Ecotourism (DWME) at its Katima Mulilo Campus that will offer wildlife-related higher education for the SADC Region and beyond. In order to accommodate the students and provide sufficient training facilities for the program, the campus at Katima Mulilo needs to be extended. The original extension proposal was to provide additional facilities on the existing campus site. However, due to the nearby brick factory and associated noise and dust levels, the area was not deemed suitable. In addition due to prone flooding the area was not deemed fit to extend the Campus in the easterly direction and rather to establish a mini Botanical garden. A site opposite the existing campus has been identified as the preferred location, as it offers an opportunity to develop a dedicated Campus, well suited for educating students on all aspects related to the natural environment.

The campus extension structures are designed to foster and protect the immediate environment. This includes integrating the campus into the site environment (e.g. existing vegetation and wetlands) and linking the different nodes of the campus by boardwalks that weave around the natural vegetation. The dedicated campus for the DWME will comprise lecture halls, office space, a boardroom, a library, a multipurpose hall, jetty boat launch, workshop, laboratories (both wet and dry), administrative storerooms, student accommodation, visiting lecturer/staff accommodation, seminar rooms, boat house, ablution facilities and common areas and an exhibition facility to name a few. The nodes/modules will be raised off the ground to allow continued access for fauna and to limit flora disturbance, and will be connected via elevated boardwalks. This raised design also protects the campus from potential flooding.

This report lays out the parameters for the environmental management of the project through construction, operation and if necessary decommissioning, though the latter is unlikely as educational facilities normally last for many decades and even centuries. The EMP equips those responsible for the environmental management with templates listing what needs to be monitored, as well as those reviewing and assessing an indication of whether everything is being done correctly and whether the goal of protecting the environment and mitigating impacts is being achieved.

In summary, this EMP, which must be read in conjunction with the assessment report, outlines all the environmental aspects that must be monitored throughout the construction and operation of the proposed campus extension. Note that an EMP is a living document and if environmental conditions change or project parameters change significantly then the EMP and monitoring must be adapted accordingly. The goal is to ensure that the environment and socio economic status of the area are well protected through good governance and monitoring procedures that are able to detect and quickly rectify any adverse impact on the environment or community caused by the project.

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

UNAM has identified the need to create a facility for the Department for Wildlife Management and Ecotourism at its Katima Mulilo Campus (which is an extension to the already existing UNAM Katima Mulilo Campus), that will offer wildlife-related education programmes at BSc (Hons), as well as MSc and PhD level for the SADC Region. Through providing this education, skills will be developed which will contribute to the conservation management and wildlife protection in the SADC region; thereby supporting the overall management of trans-frontier conservation areas as well as the implementation of landscape-level conservation approach.

In order to accommodate the students and provide sufficient training facilities for the program, the campus at Katima Mulilo needs to be extended. The original extension proposal was to provide additional facilities on the existing campus site. However, due to the proximity of a brick factory and the associated noise and dust levels, as well as prone flooding in this low lying area the site/the area was not deemed suitable. A site opposite the existing campus, has been identified as the preferred location as it offers an opportunity to develop a dedicated campus well suited for educating students on all aspects related to the natural environment. The design will be integrated into the natural surroundings, and due care will be given to the environment, thus reflecting the syllabus taught by the Department for Wildlife Management and Ecotourism (DWME) UNAM. The proposed campus location is illustrated in Figure 1. The design will be integrated into the surrounding nature and duty and care will be given to the environment thereby reflecting the syllabus taught by the Department for Wildlife Management and Ecotourism.

The scoping report describes and assesses the potential environmental impacts in detail, while this EMP details how and by whom these potential impacts should be monitored.

1.2. ENVIRONMENTAL REGULATORY REQUIREMENTS

The proposed project is considered as a Listed Activity as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act, (EMA), 2007 (Act No. 7 of 2007) (referred to herein as the EIA Regulations). As a Listed Activity an application for an Environmental Clearance Certificate is required. An Environmental Scoping Report and Environmental Management Plan (EMP) are required as part of the Environmental Clearance Certificate application, as well as to support the decision-making process. This report presents the EMP (see Section 1.3) and has been undertaken in accordance with the requirements of the Environmental Management Act, 2007 and associated Regulations.

1.3. PURPOSE AND SCOPE OF THIS REPORT

The purpose of this EMP is to provide a management framework for the planning and implementation of construction, and provide construction standards and operating arrangements so that potential environmental and social impacts of the project are prevented, mitigated and minimised as far as reasonable practicable, and that statutory requirements and other legal obligations are fulfilled. This EMP also presents protocols and procedures, and roles and responsibilities to ensure the management arrangements are appropriately and effectively implemented.

This EMP forms an appendix to the Environmental Scoping Report for the UNAM Katima Mulilo Campus Extension project; therefore, the Environmental Scoping report should be referred to for further information on the project, assessment methodology, applicable legislation and assessment findings.

This EMP is a live document and should be reviewed at predetermined intervals, and/or updated when the scope of works alters, or when further data/information can be added. All personal working on the project will be legally required to comply with the standards set out in the EMPs.

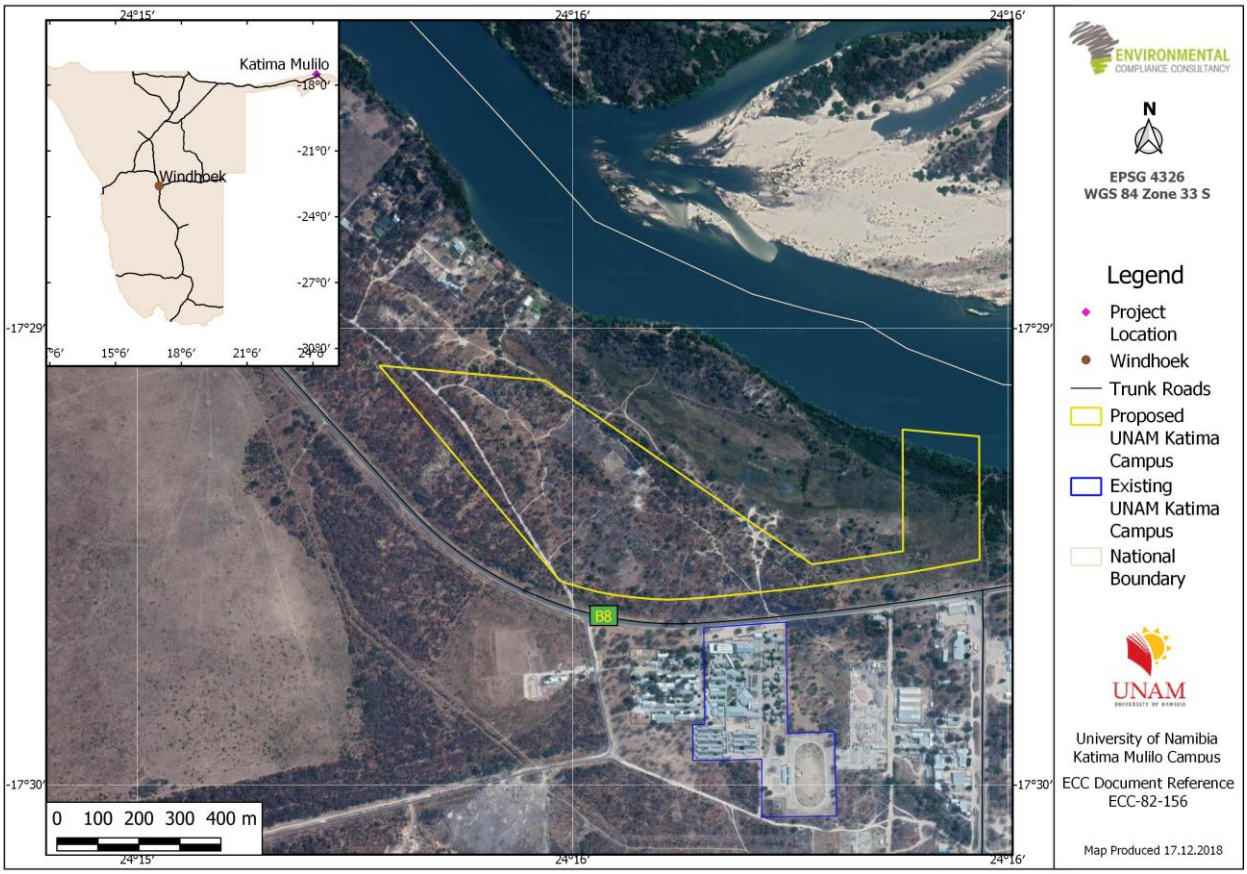

Figure 1 – Proposed Project Location showing proposed UNAM Katima Mulilo campus extension

The scope of this EMP addresses the construction phase of the project. The current understanding of each phase is as follows:

- **Construction phase**: Construction of the UNAM Katima Mulilo campus extension and access roads will be in three phases:
  - **Phase 1 - Tendering/Inception Phase:** Project preparation, tendering for project implementation support, and the inception phase for the contracted project team. Set up of the project implementation plan, staffing schedule, and resource plan, as well as the final infrastructure development plan. Phase 1 will last for approximately one year (ongoing).
  - **Phase 2 - Concept Development and Phase 1 Construction:** Marketing, networking, research, business/sustainability, and training will be implemented, and the first construction phase (for approx. 50% of envisaged student population) will be planned and implemented. Activities in this phase include, but are not limited to, tendering for a construction company (first construction phase), development/adaptation of curricula, development of staffing schedule/plan and recruitment of lecturers. This phase will last approximately three years.
  - **Phase 3 - Piloting and Phase 2 Construction:** This will be the final phase of the project implemented, i.e. the finalised first construction elements will be opened and actively used in training, research, networking, etc. At the same time, the second construction phase will be implemented in order to complete the extension. Given the modular design, this is easily achievable. This phase has an approximate duration of two years.

1.4. MANAGEMENT OF THIS EMP

The proponent will hold the Environmental Clearance Certificate for the proposed project and shall be responsible for the implementation and management of this EMP. Prior to the construction works commencing, this EMP shall be reviewed, amended as required and approved ready for implementation. The implementation and management of this EMP and thus the monitoring of compliance shall be undertaken through daily duties and activities and monthly inspections.

This EMP shall be circulated to all contractors and shall be made available on the Environmental Compliance Consultancy's website.

1.5. LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS OF THIS EMP

This EMP does not include measures for compliance with statutory occupational health and safety requirements.

Where there is any conflict between the provisions of this EMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, project approval conditions, permits, standards, guidelines and relevant laws), the contract and statutory requirements are to take precedence.

The information contained in this EMP has been based on the project description as provided in the Environmental Scoping Report. Where the design or construction methods vary, this EMP may require updating and potential further assessment undertaken.

1.6. ENVIRONMENTAL CONSULTANCY

Environmental Compliance Consultancy, a Namibian consultancy registration number 2013/11401, has prepared this EMP on behalf of the proponent. Environmental Compliance Consultancy operates exclusively in the environmental, social, health and safety fields for clients across Southern Africa, in the public and private sector. Environmental Compliance Consultancy is independent to the proponent and has no vested or financial interested in the proposed project.

1.7. STRUCTURE OF THIS EMP

The following structure has been adopted for this Report:

- Chapter 1 – Introduction
- Chapter 2 – Project Management and Personnel
- Chapter 3 – Communications and Training
- Chapter 4 – Reporting, Compliance and Enforcement
- Chapter 5 – Environmental and Social Management
- Chapter 6 – Implementation of the EMP

2. PROJECT MANAGEMENT AND PERSONNEL

2.1. UNIVERSITY OF NAMIBIA (UNAM)

UNAM will hold the Environmental Clearance Certificate for the development and will be responsible for the implementation and management of this EMP across the development for its entire lifetime. The proponent will provide a Project Team to oversee and undertake the construction works, which will be composed of the proponent's personnel, contractors and consultants. A nominated role will be identified to ensure EMP implementation and compliance throughout the construction and operational phases and, if necessary, into the decommissioning phase.

2.2. ORGANISATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES

The proponent will be responsible for:

- Ensuring all members of the Project Team, including contractors and consultants comply with the procedures set out in this EMP;
- Ensuring that all persons are provided with sufficient training, supervision and instruction to fulfil this requirement; and
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

Contractors will be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this EMP, and meet the responsibilities listed above.

The key personnel and environmental responsibilities of each role through the project life are presented in Table 1. The contact details of key personnel will be recorded and displayed clearly at the construction site as well as being distributed to key project personnel, contractors and sub-contractors.

Table 1 – Key Roles and Responsibilities

ROLE	RESPONSIBILITY & DUTIES
UNAM (Proponent)	– Overall responsibility for the implementation and management of this EMP. – Ensure environmental policy is communicated to all personnel throughout the proposed project. – Responsible for providing the required resources (including financial and technical) to complete the required tasks. – UNAM, will review reports regarding the implementation of the EMP, and make payments to the Contractor/Engineer based on satisfactory performance, including satisfactory implementation of the EMP. – UNAM can also give formal warnings and impose fines and penalties on the Contractor when the Contractor neglects to implement the EMP satisfactorily.
Project Manager / Engineer's Representative (ER)	The person who represents UNAM on site and is responsible for construction supervision, contract administration, and who formally communicates with the Contractor on behalf of UNAM on all matters. The PM` is responsible for: – Ensuring compliance with this EMP, including overseeing the construction works, day to day activities during operations and routine and non-routine maintenance during operations, as well as overseeing the decommissioning of this development should it be necessary in the future. – Ensuring that all personnel are aware of the commitments made in this EMP and any other relevant regulatory requirements applicable to the project; – Ensuring adequate resources are made available for implementation of this EMP;

ROLE	RESPONSIBILITY & DUTIES
	– Daily monitoring of the project regarding compliance with the EMP; – Maintaining the *Community Issues and Concerns Register*, and keeping records of complaints, non-compliance, fines, penalties and assisting in damage assessments where incidents and accidents or serious infringements have occurred, both verbally and in writing, and issuing instructions for the remedying of these situations; – Ensuring all employees and contractors participate in a Site Induction process prior to commencing work on the project; – Maintaining an up to date register of employees who have completed the Site Induction; – Reporting any non-compliance or accidents to the Regulatory Authority. – Enforcing temporary work stoppages where serious environmental, social, health & safety infringements or non-compliances have occurred.
Site Manager / Contractors	Appointed to manage the performance of the construction and operational maintenance activities. Responsible for the implementation of this EMP and ensuring all activities are compliant with this EMP, as well as: – Managing the preparation and implementation of method statements for certain activities, and ensuring the Environmental Manager reviews all method statements and the relevant environmental protocols are incorporated; – Reporting any non-compliance or accidents to the PM and Environment Manager; – Ensuring that all staff have attend a site induction session before commencement of any work on site and that they are adequately informed of the requirements of this EMP; – Ensuring that all contract workers, sub-contractors and visitors to the site are conversant with the requirements of this EMP, relevant to their roles on site and adhere to this EMP at all times; and – Receiving, responding to and recording complaints.
Construction workers / maintenance workers	Responsible for being compliant with this EMP throughout the construction works, in addition to: – Ensuring they have undertaken a site induction and are conversant with the requirements of this EMP; – Ensuring appropriate briefings for certain activities have been provided and fully understood; – Adhering to this EMP at all times; – Reporting any operations and conditions that deviate from the EMP or any non-compliant issues or accidents to the Site/Project Manager.

2.3. CONTRACTORS

Any contractors hired during the construction works or maintenance activities during the operational phase will be compliant with this EMP, and will be responsible for the following:

- Undertaking activities in accordance with this EMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements;
- Implementing appropriate environmental and safety management measures;

- Reporting of environmental issues, including actual or potential environmental incidents and hazards, to the Site / Project Manager; and
- Ensuring appropriate corrective or remedial action is taken to address all environmental hazards and incidents reported by employees and subcontractors.

2.4. EMPLOYMENT

The proponent and all contractors shall comply with the requirements of the Republic of Namibia Regulations for Labour, Health and Safety, and any amendments to these regulations. The following shall be complied with:

- In liaison with local government and community authorities the proponent and contractors will ensure that local people have access to information about job opportunities and are considered first for construction / maintenance contract employment positions;
- The number of job opportunities will be made known, together with the associated skills and qualifications. The maximum length of time the job is likely to last for will be clearly indicated;
- Every effort will be made to recruit from the pool of unemployed workers living in the local area;
- Principals will be developed that ensure a robust employment policy is implemented across the proposed project; and
- Foreign workers with no proof of permanent legal residence or valid work permit/visa will not be hired.

3. COMMUNICATIONS AND TRAINING

3.1. INTRODUCTION

The project will involve various construction activities and the operations of the development will interface with sensitive local environmental receptors. It is important that regular communications with the local communities are undertaken, and feedback is obtained, as well as regular communications within the Project Team during construction to ensure environmental awareness is communicated.

3.2. COMMUNICATIONS

3.2.1. ENVIRONMENTAL COMMUNICATIONS: PROPONENT TEAM

During construction, the Site/Project Manager, will communicate environmental issues to the Project Team through the following means:

- Site induction;
- Environmental posters and site notices;
- Method Statement and Risk Assessment briefings;
- Audits and site inspections;
- Toolbox talks, including instruction on incident response procedures; and
- Briefings on key project-specific environmental issues.

This EMP will be distributed to the Construction Project Team, including subcontractors, to ensure that the environmental requirements are communicated effectively. Key activities and environmentally sensitive operations will also be briefed to workers and contractors/subcontractors.

During the construction phase, regular communications between the management team will include discussing any complaints received and actions to resolve them; any inspections, audits or non-conformance with this EMP; and any objectives or target achievements.

3.2.2. ENVIRONMENTAL COMMUNICATIONS: COMMUNITY AND STAKEHOLDERS

The Project Manager will represent the project and will liaise with the local communities and stakeholders during the construction phase and through the operations phase where necessary. Contact details of the proponent and Project Manager will be circulated among the community in case there should be any questions, concerns or complaints. This EMP will be published on Environmental Compliance Consultancy's and the proponent's website.

3.3. COMPLAINTS HANDLING AND RECORDING

Any complaints received verbally by any personnel on the project site will be recorded by the receiver, including the name and contact details of the complainant, date and time of the complaint, and the nature of complaint. The information will be given to the Project Manager who is overall responsible for the management of complaints, and who will provide a written response to the complainant. The Project Manager (PM) will inform the Site Manager of issues, concerns or complaints.

The PM will maintain a complaint's register that will detail the name and contact details of the complainant, the date and time of the complaint, the nature of complaint, action taken to resolve issues, and date of complaint handover. The PM will be responsible for nominating the correct personnel to co-ordinate and resolve the issue.

The workforce will be informed about the complaints register, its location and the person responsible, in order to refer local residents or the general public who wish to lodge a complaint.

The complainant will be informed in writing of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons why are also to be recorded in the register.

The complaints register will be kept for the duration of the project and will be available for government or public review upon request.

3.4. TRAINING AND AWARENESS

All personnel working on the project will be competent to perform tasks that can minimise environmental impacts should they occur. Competence is defined in terms of appropriate education, training and experience.

All personnel involved in the project will be inducted to the site with specific environment and social awareness training, and health and safety briefings. The environment and social awareness training will ensure that personnel are familiar with the principles of this EMP, the environment and social aspects, and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The PM will ensure a register of completed training is maintained. The Site Induction should include, but not be limited to the following:

- A general site-specific induction that outlines:
    - What is meant by “environment” and “social”;
    - Why the environment needs to be protected and conserved;
    - How construction activities can impact on the environment;
    - What can be done to mitigate against such impacts;
    - Awareness about the environmental sensitivity of the site and Zambezi River;
    - Clear instructions about “No-Go” areas. No work is to be performed outside of the construction site area, and no vehicles or persons are to travel outside of existing access roads, or the Contractor’s camp;
    - No trapping, poisoning or shooting of animals is allowed;
    - No removal or disturbance of vegetation or the land area outside of the existing construction site, camp area and access road and minimisation of vegetation disturbance within these areas wherever possible. This includes no chopping down of trees for firewood;
    - Information regarding all regulatory conditions;
    - Instructions on proper handling of hazardous materials and on proper storage of these materials and machinery;
- The inductee’s role and responsibilities with respect to implementing the EMP;
- The site environmental rules;
- Details of how to deal with, and who to contact, if environmental problems should they occur;
- Basic vegetation clearing principals and species ID sheets;
- The potential consequences of non-compliance with this EMP and relevant statutory requirements; and
- The role of people responsible for the project.

4. REPORTING, COMPLIANCE AND ENFORCEMENT

4.1. Environmental Performance Management

Chapter 5 provides a Register of Environmental Risks and Issues, which identifies mitigation and monitoring measures, as well as roles responsible. This register will be subject to regular review by the PM and updated when necessary.

The PM and Site Manager will use this register to undertake monthly inspections (see next section) to ensure the project is compliant with this EMP.

4.2. Daily Compliance Monitoring

A copy of this EMP shall be on site throughout the construction works and shall be available upon request. It is the responsibility of the PM and Site Manager to ensure this EMP is complied with through their daily roles. Daily inspections will be undertaken by the Site Manager (or nominated site supervisor). Any environmental problems or risks identified shall be notified to the PM and actioned as soon as is reasonably practicable.

4.3. Monthly Compliance Monitoring

Monthly inspections shall be undertaken by the Site Manager to check that the standards and procedures set out in this EMP are being complied with and pollution control measures are in place and working correctly. Any non-conformance shall be recorded, including the following details: brief description of non-conformance; the reason for the non-conformance; the responsible party; the result (consequence); and the corrective action taken and any necessary follow up measures required.

4.1. Reporting

There shall be a requirement to ensure that any incident or non-compliance, including any environmental issue, failure of plant and equipment that perform an environmental function or accident, is reported to the PM.

4.2. Non-compliance

Where it has been identified that works are not compliant with this EMP, the PM shall employ corrective actions so that the works return to being compliant as soon as possible. In instances where the requirements of the EMP are not upheld, a Non-Conformance and Corrective Action Notice shall be produced. The Notice shall be generated during the inspections and the PM shall be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming.

A non-compliance event / situation, for example, is considered if:

- There is evidence of contravention of this EMP and associated indicators or objectives;
- The Site Manager and/or Contractor have failed to comply with corrective or other instructions issued by the PM or qualified authority; or
- The Site Manager and/or Contractor fail to respond to complaints from the public.

Works shall be stopped in the event of a non-compliance, until the corrective action(s) has been completed

4.3. Disciplinary Action

This EMP is a legally binding document and non-compliance with it will result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to):

- Fines/penalties;

- Legal action;
- Monetary penalties imposed by the proponent on the Contractor;
- Withdrawal of license/s; and
- Suspension of work.

The disciplinary action will be determined according to the nature and extent of the transgression/non-compliance, and penalties are to be weighed against the severity of the incident.

4.4. Environmental Permits

4.4.1. Ecology

Article 23 (b) of the Forest Act, 2001 and associated Regulations, states that the clearance of vegetation on an area of land greater than 15 hectares will require a permit. This will include the removal of any protected or important species. Such clearance is not anticipated to be necessary during the planned campus construction, but if it becomes necessary (e.g. flood prevention drainage culvert construction) an application will be made to the Directorate of Forestry, under MAWF and approval must be in place prior to construction activities commencing.

4.4.1. Water Abstraction

Whilst the Water Resources Management Act, 2013 is not enforced, it is best practice to adhere to the stipulations while ensuring compliance to the Water Act of 1956 is also maintained. The proponent shall apply for a licence to abstract water and operate in accordance with any conditions in the licence.

5. ENVIRONMENTAL AND SOCIAL MANAGEMENT

5.1. OBJECTIVES AND TARGETS

Environmental objectives for the project are as follows:

- Zero pollution incidents;
- Minimise waste sent to landfill or being burnt;
- Minimise disruption to local communities (and therefore complaints);
- Protect local flora and fauna; and
- Use natural resources effectively and efficiently.

Procedures for monitoring processes against the project environmental objectives will be agreed with the PM.

5.2. ENVIRONMENTAL PERFORMANCE AREAS

5.2.1. NOISE CONTROL

While the proposed site is relatively far away from other people (i.e. existing UNAM campus – 500m) noise should be minimised as much as possible during construction works. The following measures will be applied:

- Limit working hours to 06h30 – 18h30 during summer and 07h00 – 17h30 during winter, Monday to Saturday. No construction work on Sunday or public holidays; unless approved and is non intrusive;
- Inform local communities of scheduling and duration of noisy activities through notices or face-to-face communications.

5.2.2. POLLUTION CONTROL AND CONTINGENCY PLAN

HANDLING OF FUEL, OIL AND CHEMICALS

The Site Manager/Contractor will take all reasonable precautions to prevent fuel, oil and chemical spills whilst undertaking works on site due to the proximity of the River and potential pollution risks. To this end, the Site Manager / Contractor will ensure that:

- All necessary approvals are in place prior to bringing fuel, oil or chemicals on to site;
- All fuel, oil and chemical deliveries (if any) will be supervised by a responsible person, who will be trained to deal with any spills;
- All mobile plants will be fuelled prior to coming onto the construction area, and when required, will be refuelled in a designated area on an impermeable surface or over a spill/drip tray. A spill kit will be located at each designated refuelling point. A drip tray must also be available to catch any spills;
- Regular checks are performed to verify that no leaking or defective equipment is brought onto site;
- Any vehicles and/or plant that has leaking lubricants, fuels or other hazardous fluids will be repaired or removed from the site;

Any accidental spillages of fuels and oils, or other hazardous substances, will be cleaned up immediately and be reported to the PM/Site Manager.

5.2.3. FIRE PREVENTION

The Site Manager/Contractor will take all necessary precautions to prevent the ignition and spread of fires caused either deliberately or accidentally as a result of the work being performed (E.g. welding or grinding during steelworks).

The Site Manager/Contractor will prepare and implement a Fire Prevention Plan for fire prevention and emergency management. The Plan will include, but will not be limited to, the following:

- Potential sources of fire risk;
- Procedures to be followed to control an accidental fire;
- Identification and location of fire-fighting equipment that will be maintained on site and deployed in the event of an emergency.

The Site Induction will include a briefing of the risks and potential consequences of starting fires. Employees will also be warned of the risks of careless disposal of burning cigarette butts.

The Site Manager will provide fire-fighting equipment, the location of which will be included in the Site Induction.

5.2.4. Solid Waste Management

The EMA (2007), Section 3, paragraph (i) states that waste must be reduced, re-used and recycled where possible, therefore in accordance with the Act, waste generated as a result of the project will be managed and dealt with in accordance with a Waste Management Plan. This Plan will be produced prior to construction activities commencing and will cover any waste produced during the operational phase. The plan will include the following information:

- Describe each waste type expected to be produced during construction activities;
- Estimate the quantity of each waste type;
- Identify the waste management action proposed for each waste stream, including re-using, recycling, recovery and disposal; and
- Designated areas to collect and separate types of waste.

The following waste management measures will be followed:

- Scavenger-proof waste bins will be provided throughout the camp, at the following locations (but limited to these locations): ablution area, dining area, sleeping area, office area, workshop area, storage and at Camp entrances /exits.
- Waste will be collected, separated and stored in a designated area, where a temporary fence is required;
- A waste storage container will be provided at the Camp into which the bins are to be emptied on a regularly;
- Waste storage areas will be kept clean and tidy at all times;
- Waste will be transported to a permitted landfill facility on a regular basis to avoid pests and bad odours; and
- Under no circumstances can solid waste be burned, dumped or buried at the camp or on site.

Portable toilets/toilet facilities will be provided for the construction workforce. These will be emptied and maintained regularly by the Contractor.

All construction-related waste will be transported and disposed of off-site in a permitted landfill facility.

It is unlikely that hazardous material and wastes will be produced, however in the event that they are, they will be managed in a safe and responsible manner so as to prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials. Hazardous and non-hazardous waste will be stored separately at all times.

6. REGISTER OF ENVIRONMENTAL RISKS AND ISSUES

An environmental review of the proposed project has been completed to identify all the commitments and agreements made within the Environmental Scoping Report. From this, a schedule of environmental commitments and risks has been produced (Table below), which details deliverables including measures identified for the prevention of pollution or damage to the environment during the construction phase.

Table 2 – Environmental Risks and Issues, Mitigation and Monitoring Measures

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
Use of Plant and equipment	– Odours – Safety – Aerial emissions – Potential loss of oil and fuel causing ground contamination	– Plant and equipment shall be brought onto site as and when required and stored in specific areas. – Amenities (e.g. portable toilets) shall be provided and set up in a suitable location (if required). – A 'good housekeeping' policy shall be adopted across the construction and maintenance working areas. – Refuelling shall be undertaken in a designated area whereby spillage is contained on a bunded and impervious surface. – Large drip trays can be used to avoid spillage onto bare surfaces either at refuelling points or at remote sites where oil or hydraulic fluids must be contained during emergency breakdowns.	– Daily observations	– Project Manager
	– Dust generation	– Use existing access roads and tracks. – Restricted speeds (<30km/hr).	– Daily observations	– Project Manager
	– Noise generation	Noise shall be minimised as much as possible during construction works. The following measures shall be applied: – Limit normal operating hours to 07h00 to 18h00 on weekdays and 07h00 until 13h00 on Saturday; – Regular maintenance and servicing of vehicles, plant and equipment; and – All plant to be shut down or throttled back between periods of use.	– Daily observations	– Project Manager
Vegetation Clearance	– Alien species	– Ensure the correct removal of alien invasive vegetation from the proposed development area and prevent the establishment and spread of alien invasive plants due to the development activities. – Ensure the potential introduction and spread of alien plants is prevented. – All project or earth moving equipment must have an internal weed and seed	– Monitor daily the removal of the alien invasive vegetation. – Check the tyre of vehicles after use on site	– Employees – Project manager

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		inspection completed prior to equipment being used on site.		
	– Removal of vegetation – loss of flora and fauna, protected/important species – Dust generation	– Use existing tracks where possible. – Identify and mark important tree species and clearly highlight to construction workers so that they are avoided. – Apply speed restrictions. – Avoid off road driving.	– Daily visual inspection during construction of new access tracks/widening	– Project Manager – Employees
New jobs	– Employment creation and skills development opportunities during the construction phase.	– Maximise local employment and local business opportunities to promote and improve the local economy. – Enhance the use of local labour and local skills as far as reasonably possible. Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. – Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	– NA	– NA
Site and ground Preparation	– Creation of dust	– Specific activities that may generate dust shall be avoided during high wind events, e.g. soil preparation activities.	– Daily observations	– Project Manager
	– Heritage remains	Discovery of unearthed archaeological remains to be uncovered, the following measures (chance find procedure) shall be applied: – Works to cease, area to be demarcated with appropriate tape by the site supervisor, and the Site Manger to be informed; – Site Manager to visit the site and determine whether work can proceed without damage to findings, mark exclusions boundary and inform the Environment and Social Manager with the GPS position if possible; – If works cannot proceed without damage to findings, Site Manager to inform the Environmental Manager who will get in touch with an archaeologist who will provide advise; – Environment and Social Manager / Archaeological Specialist to evaluate the significance of the remains and identify appropriate action, for example,	– Daily observations	– Project Manager

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		record and remove; relocate or leave in situ (depending on the nature and value of the remains); – Inform the police if the remains are human; and – Obtain appropriate clearance or approval from the competent authority, if required, and recover and remove the remains to the National Museum or National Forensic Laboratory as direct.		
Operating plant and equipment	– Dust generation – Increase in noise levels	– Normal working hours should be restricted between 07:00-18:00 during the week and 07:00-13:00 on Saturdays. No construction work may be conducted on Sundays. – Regular maintenance of plant, equipment and machinery. – Spilled oil should be treated as hazardous waste. – Drip trays for trucks to avoid oil leakages and to be used when refuelling.	– Daily visual inspection of operations – Maintenance should be carried out regularly (as required by equipment) – The site should be inspected daily for oil spills.	– Project Manager – Employees (equipment operators)

6.1. Environmental Emergency and Response Contacts

The PM will be the primary contact person in the event of an environmental emergency. The PM has the authority and independence to request reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse environmental impact be anticipated.

In the event of an incident that requires the emergency services, the services that should be contacted are listed in the table below.

Table 3 - Emergency Services contact telephone numbers (Katima)

AMBULANCE	POLICE	FIRE BRIGADE
+264 (66) 25-3012	+264 (67) 1-0111	+264 (66) 25-3236

For large-scale spills and other significant environmental incidents, the fire services shall be contacted as required and the Ministry of Environment and Tourism (MET) office informed of the incident (telephone +264 61 284 2111). All correspondence with MET should be undertaken by the PM.

For the clean-up of smaller spills, the relevant Material Safety Data Sheet (MSDS) should be obtained online and be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

All environmental incidents, regardless of their size or significance, should be recorded and reported to either the PM.

7. IMPLEMENTATION OF THE EMP

This EMP:

A. Has been prepared pursuant to a contract with the proponent;

B. Has been prepared on the basis of information provided to (ECC) up to December 2018;

C. Is for the sole use of the proponent, for the sole purpose of an EMP;

D. Must not be used (1) by any person other than the proponent or (2) for a purpose other than an EMP; and

E. Must not be copied without the prior written permission of (ECC).

(ECC) has prepared the EMP on the basis of information provided by the proponent, specialist reports and the Environmental Scoping Report.