UPDATED ENVIRONMENTAL MANAGEMENT PLAN (UEMP): CONSTRUCTION AND OPERATION OF AN ANIMAL RENDERING AND HIDES PROCESSING PLANT, BRAKWATER-KHOMAS REGION: NAMIBIA

Environmental Consultant:
Plan Africa Consulting cc

Project Proponent:
Anpro Hides & Skins cc

December 2019

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PROJECT TITTLE:	UPDATED ENVIRONMENTAL MANAGEMENT PLAN (UEMP): CONSTRUCTION AND OPERATION OF AN ANIMAL RENDERING AND HIDES PROCESSING PLANT, BRAKWATER-KHOMAS REGION: NAMIBIA
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Project Name:
Construction and Operation of an Animal Rendering and Hides Processing Plant, Brakwater-Khomas Region: Namibia

Period

This updated EMP covers the period starting from December 2014 to November 2019 , this was necessitated by the fact that no biannual reports were submitted during the mining after the Environmental Clearance Certificate was issued on 09 December 2014.

Stage of Report

Final Report

Client

Anpro Hides and Skins

Date of Release:

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Definitions

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&APs	Interested and Affected Parties
MET: DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
PRP	Pit Rehabilitation Plan
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Anpro Hides and Skins herein referred to as the "proponent" is a local business operating an Animal rendering plant in Brakwater; Windhoek -Namibia. The proponent intends to continue with the ongoing operations and expand operations into hides processing, all to be done in an environmentally responsible manner on their current operating Site in Brakwater. The animal skins processing is being proposed because the existing operations and machinery had not been in use because of the lack of clientele, thus the facility was operating below capacity.

Thus, in accordance to the requirements of the Environmental Management Act, No. 7 of 2007 Section 40 the companies' environmental clearance certificate granted on in December 2014 has come to its lapse period as section 40 of the Act states that:
- (1) An environmental clearance certificate becomes effective and operates from the date endorsed on the certificate.
-(2) An environmental clearance certificate remains effective for a period not exceeding three years, subject to cancellation or suspension under section 42.

It is under this background that this document has been prepared following a request by the proponent, to the consultant (Plan Africa Consulting cc) to conduct an environmental audit and develop an environmental management plan to accompany the application for renewal of the expired Environmental Clearance Certificate Renewal to the MET: DEA. The document gives an in-depth understanding of the nature of environmental, occupational health and safety and social (EOHS&S) risks associated with the current on-going animal rendering plant and goes on to give mitigation and prevention measures to manage environmental risks and non-compliance issues surrounding the operations of the venture.

1.2. PROJECT LOCATION

The proposed plant is situated on Portion 16 of Portion 13 of the Farm Emmarentia No. 380, Windhoek, approximately 25 kilometres from the City of Windhoek en route to Okahandja. This portion of land falls under the direct administration of the City of Windhoek. Although the site is governed under the Town Planning Scheme, 1995 of the City of Windhoek it generally and currently is semi-rural in nature and bordered by other small holding establishments many of which have been in recent times rezoned from residential/agricultural to industrial. In particular, this portion of land was rezoned from "residential" to "industrial" of which the Environmental Commissioner issued a Clearance Certificate on 13 August 2012.

The proposed development is approximately covering a land portion of 2.6 hectares in extent and the portion is covered by industrial shells, parking and waste handling facilities. The map below (Fig 1) gives a locality overview of the project site

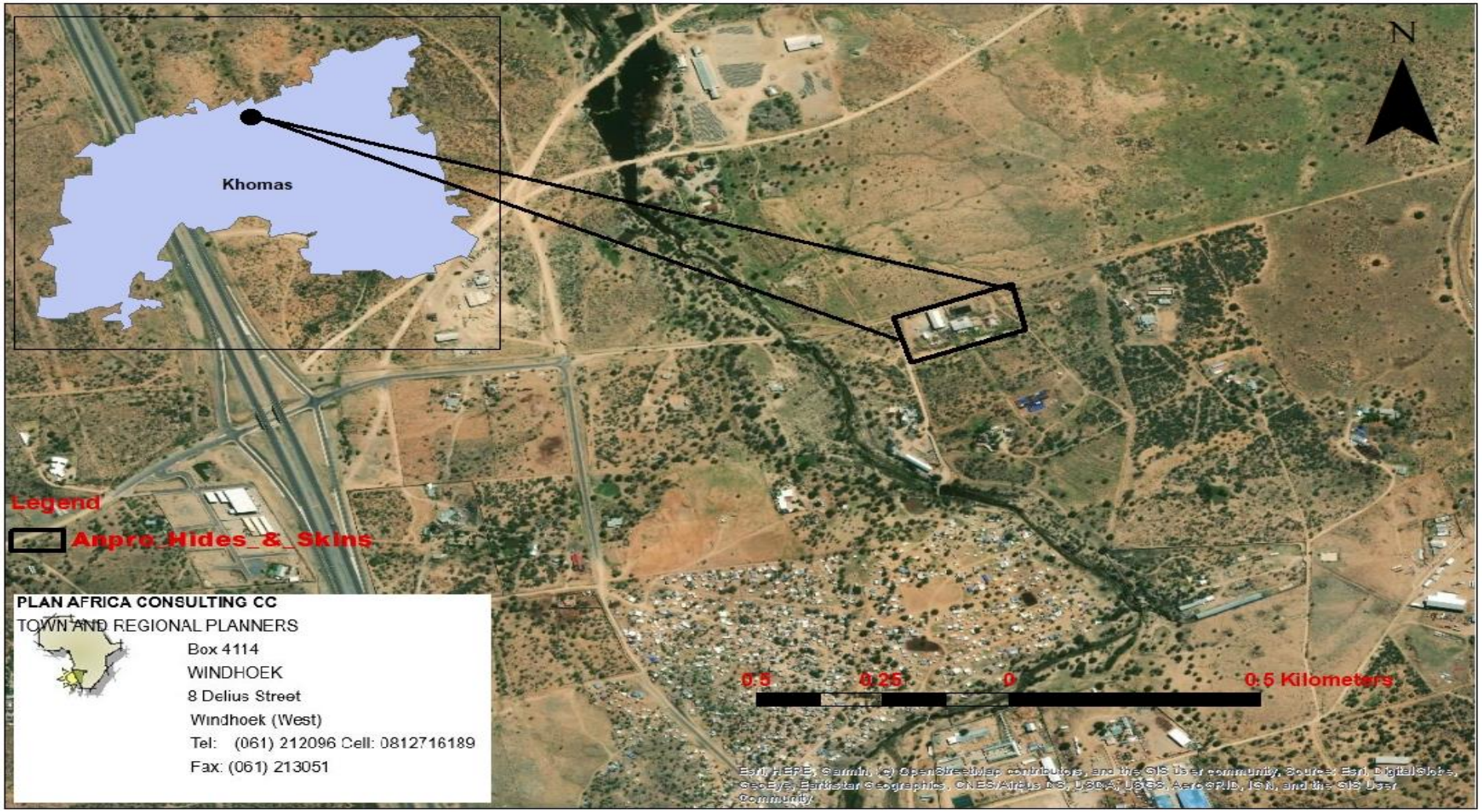

Figure 1: Anpro Hides and Skins Locality: Brakwater-Namibia

1.3. PROJECT DESCRIPTION

1.3.1. ANIMAL RENDERING PROCESS FLOW DESIGN (GUIDELINE)

Anpro hides and skins animal rendering facility involves the following process:

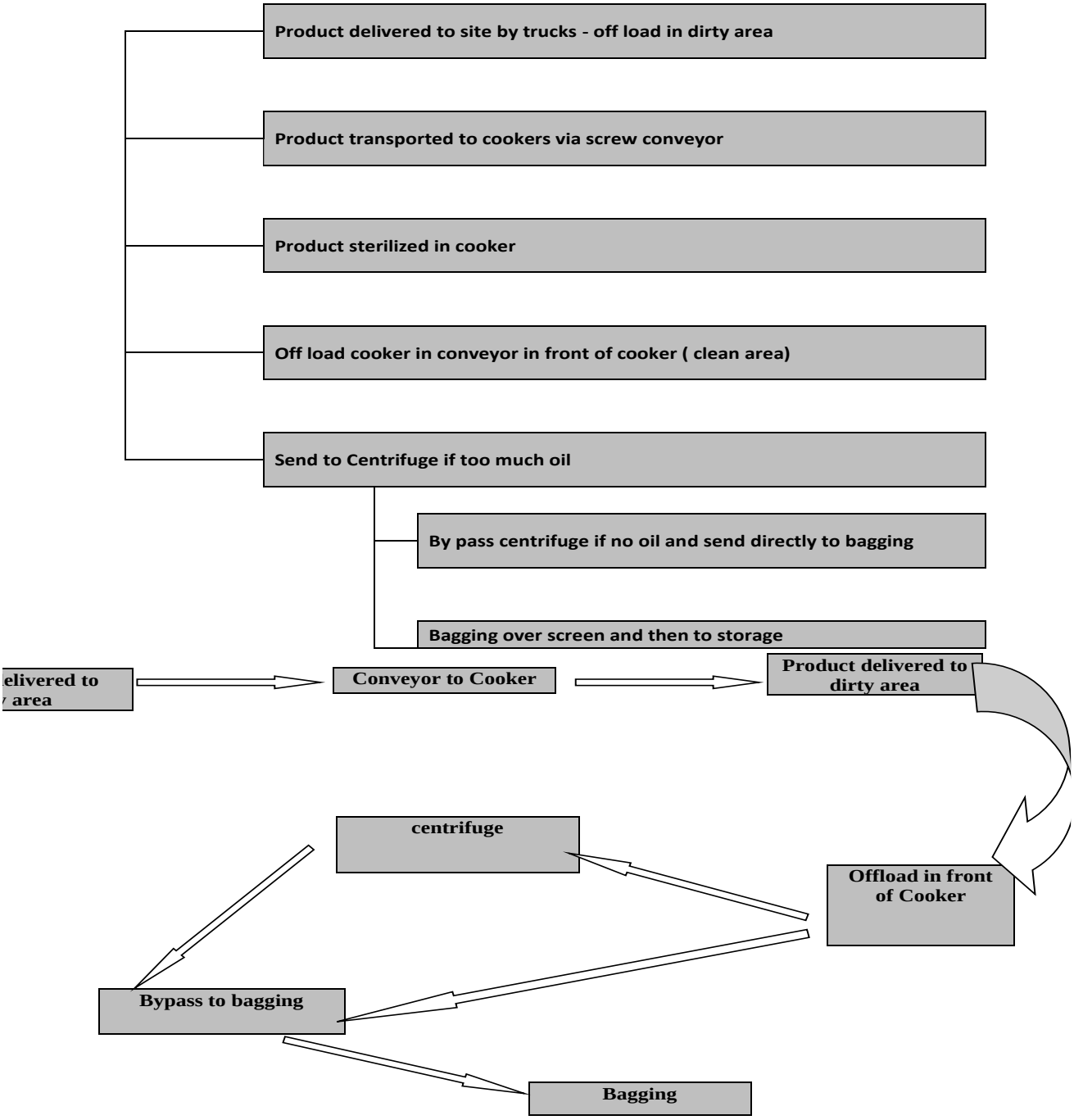

Table 1: Animal Rendering Process Flow

Product Delivery (1)

The raw material arrives in a designated vehicle, which has been constructed in a safe manner to transport raw material from the abattoir or any supplier of the raw material. The content is then tipped onto a conveyer belt, which transfers it to the by-product receiving bin.

Dirty yard (2)

After offloading the truck is taken to the wash-bay in the Dirty yard where it is washed with hot and cold water and also disinfected.

By-product receiving bin (3)

From the by-products receiving bin the raw material could in future be transferred to the pre-breaker with a screw conveyer. The receiving bin is open at the top and is provided with a valve at the lowest point for effective cleaning and disinfection after the day's work.

Bone crusher (4)

A double anvil pre-breaker breaks the material to 20 mm pieces in order to allow effective heat penetration during cooking.

Screw conveyers (5)

The mild steal screw conveyer conveys the crushed raw material to the holding bin where it lies for 1 to 2 hours as it is being processed (transferred to the cooker).

Holding bin (6)

The screw conveyer takes the raw material to the holding bin.

Cooker 1(7)

The cooker receives the raw material via the closed screw conveyer. Hydrolyses then takes about 45 minutes. After this the condensate follows that releases into the condenser which takes about 30 minutes. After this cooking takes another 4 hours.

Cooker 2(8)

The second cooker is used as a standby cooker.

Transfer screw (8)

The hot meal exits the cooker from the front through a door. From here it is transferred to the centrifuge for fat removal by a transfer screw.

Centrifuge (9)

The steam in the centrifuge mantle heats up the meal for a second time and is then turned at a high speed of 2500 r.p.m. The fat drains out of the meal after 5 minutes and drains from the centrifuge, while running to a sunken fat bin close-by. After 5 minutes of centrifugal pressure on the meal, the lid is opened, and the content is transferred with a transfer screw to the hammer mill.

Fat holding bin (10)

The fat bin is relatively large to cope with a breakdown of 48 hours. In other words, it can keep its content for 48 hours should there be a break down further down the line such as the fat transfer pump.

Fat transfer pump (11)

From the fat bin the liquid fat is pumped to the tallow tank.

Tallow (liquid oil) hopper (13)

The steam is switched on a day before delivery so that the fat becomes liquid for easy flow from the hopper to the sub-contractor's tanker. The steam in the coil must reach 45 ºC to allow the liquefying of stalled fat. After release, steam is pumped into the container in order to clean the container. The outflow from the hopper during cleaning runs through a downward pipe into a movable container, which is placed below it for the purpose of cleaning.

Hammer mill (14)

From the centrifuge the meal is transferred to the hammer mill by way of a transfer screw (this facility is not planned for now but may be an option to take place in the future). At this point the meal is milled into dust but it retains 12% moist, which is required by pet food manufacturers.

Screen drums (15)

The hammer mill outlet is provided with a screen drum in which the contents falls as it leaves the mill. The screens remove the final particles and solids, which are recycled to the cooker on a daily basis. The screen drums can accommodate 500 kg of meal per hour. These drums are also provided with an outlet valve at the lower bottom so that washing, and cleaning can be done once per week with water and disinfectants. Prescribed bags are filled below the screen drums through a trap door in the same area.

Bone meal packaging (16)

Every day, in the afternoons, all filled bags are cart wheeled to a separate bone meal packaging area. The bags are stacked onto stainless steel racks, which do not come into contact with the floor. This room is independent and completely closed up with lockable doors. This area is washed once per week and also disinfected. The sub-contractors load their cargo at this store.

1.3.2. PROPOSED SKIN PROCESSING FACILITY

Also proposed in addition to the existing animal rendering plant is an animal skins processing facility/ Tannery. The proposed animal skin processing will make use most of the existing animal rendering plant equipment and a few additions as follows:

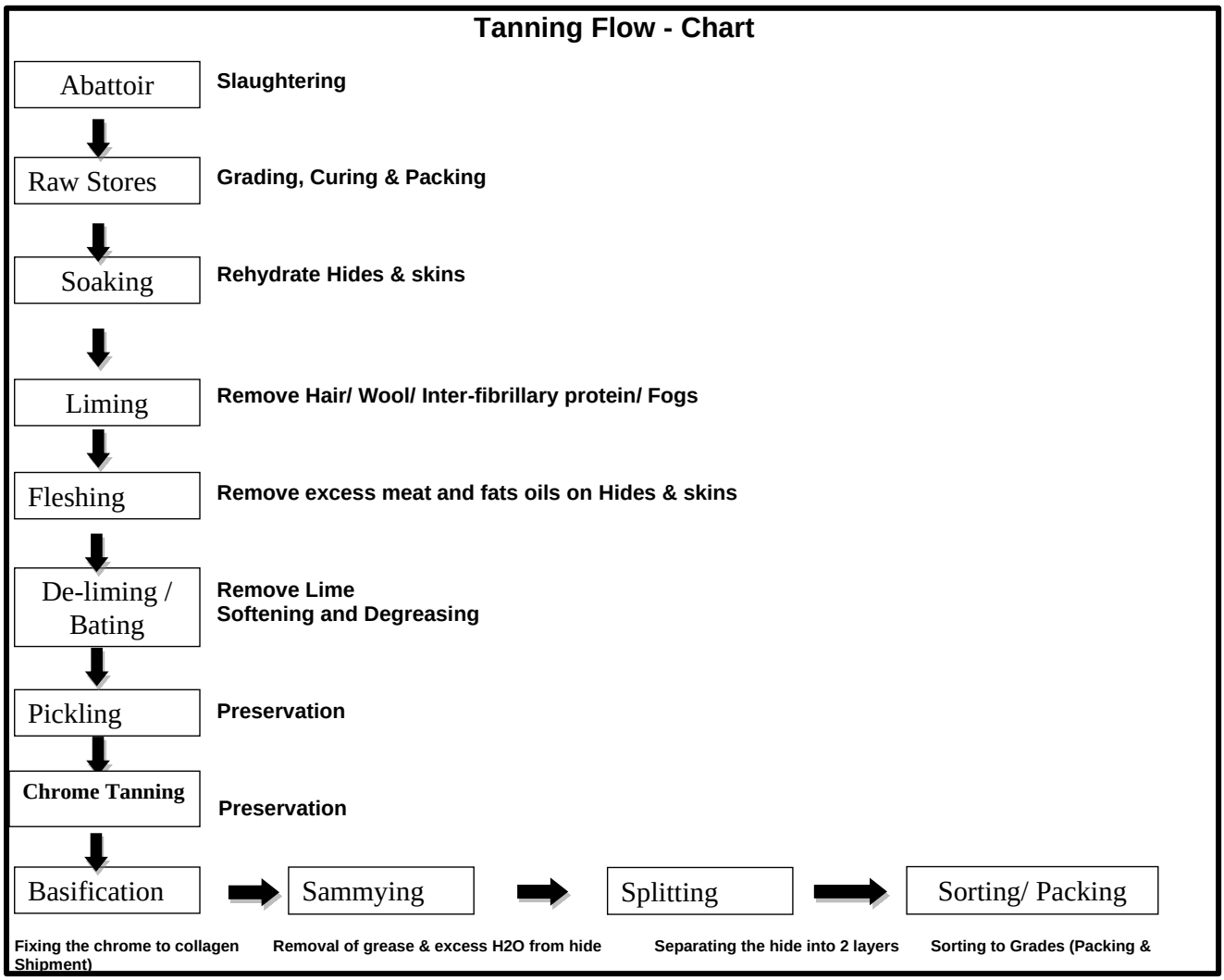

Figure 2: Animal Skins Processing

1.3.3. ANIMAL SKINS PROCESS FLOW

1. **Raw Hide & Skin Stores:** This is the most important part of the tannery as wrong procurement leads to huge loss. Hides & Skins are counted upon arrival, sorted according to grades, salted and packed for a period till processing time. The raw stores must be a cool place always to avoid hot temperatures leading to high bacterial growth.
2. **Soaking:** This is the first stage of processing of hides & skins. It is a process whereby skins are re-hydrated as they have been de-hydrated by salting or drying. Skins are soaked in paddles or drums and a biocide is added to prevent bacteria growth during processing.
3. **Liming**: Hides & Skins are limed to remove hair, unwanted fats and oils and greases and inter-fibrillary proteins. This is done by addition of lime and sulphides into the drum which causes alkaline swelling and split fibres creating binding sites for other chemicals later.
4. **Fleshing:** When and after skinning at the slaughterhouse, the hide & skin appears to contain excessive meat and fats. The removal of the excessive meat and fat on the hide & skin is done by a fleshing machine. Fleshing can be done after soaking or liming
5. **De-Liming / Degreasing / Bating:** The pH of the collagen is brought down to a lower level so that enzymes may act on it. De-liming is removal of lime out of the skin. Depending on the end use of the leather skins may be treated with enzymes to soften them, a process called bating. Bating enzymes react in certain pH levels and temperatures
6. **Pickling:** The treatment of semi-finished leather and fur products with a solution containing acid and salt. It is a method of preservation, loosens the fine structure of collagen, separates the microstructure of the derma, and endows the semi-finished product (without swelling) with the acidity needed before chrome tonnage.
7. **Chrome Tanning:** Tanning is the process of treating skins and hides of animals to produce leather. It involves a process which permanently alters the protein structure of skin, making it more durable and less susceptible to decomposition, and also possibly coloring it.
8. **Basification:** Basification is a process that increases the reaction of chrome to fix to the collagen fiber. Uniform basification is achieved by means of a smooth 'titration curve' from the acid pH range of the original tanning liquor to the pH where tanning linkages with the collagen occur.
9. **Sammying:** Is a process whereby the sammying machine absorbs excess moisture & grease from the hide during the wet process in tanneries, either wet blue or wet white. The hides are conveyed on felts through the sammying machine which absorbs the fats and as well the pressure by the rollers. For Good absorption of the grease, the felts need to be always working wet.
10. **Sorting and Packing**

11. **Splitting:** All leather hides & skins have to be split because a hide is too thick to upholster or use in any type of manufacturing. The hide & skin goes into a machine where a blade 'splits' the hide into two layers.

2. CHAPTER TWO: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.1. OVERVIEW

As part of the project operational guidelines, significant residual impacts identified in the previous chapter are mitigated to the extent possible, giving due regard to the scale of operations of the individual micro enterprises, through a systematic environmental management plan.

This plan describes measures to be adopted for reducing/managing environmental impacts of each activity in the process and assigns responsibility of implementation and monitoring/reporting to the stakeholder best placed to carry it out. This plan should be supplemented with independent monitoring to ensure and improve implementation of the plan. With condition that the full implementation of this updated EMP is done appropriately and strictly, EnviroPlan Consulting cc recommends the proposed ECC renewal be granted to the proponent.

2.2. ENVIRONMENTAL IMPACTS SUMMARY

From the preceding discussion, the major non-conformances and environmental impacts in relation to Environmental Management are as follows:

- Environmental Quality (pollution control)
- Waste Management
- Health and Safety
- Social responsibility
- Construction Activities

2.3. CONTENTS OF THE EMP

The EMP has been developed to minimize the residual impacts for the continued operation of Anpro Hides and Skins animal rendering Plant and the proposed Animal skins processing facility, particularly to:

- Prevent environmental pollution;
- Improve the health and safety of employees

In the subsequent pages, the activity wise detailed EMP is presented, which includes

- description of the agreed measures, responsibilities and instruments for the environmental management
- Guidelines for audit and monitoring the EMP.

Table 2: Fauna and Flora Management Plan

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Operation phase				
Vegetation	-Indiscriminate cutting down of trees -Cutting down of protected tree species	• Employees will be educated on protected tree species in the area • Emphasis will be given on preserving trees that are more than 18cm in width on site. • The operation phase of the project will not result in any further vegetation removal.	Operation phase	ECO
Flora	-Driving away of local animals from noise -Habitat destruction -Hunting and setting up traps	• Operations should only be done during the day to minimise noise disturbance to animals • Limit the destruction of mature tree species and seemingly habitat hotspots. • Employees will be punished or dismissed if caught setting up snares or hunting	Operation	Site Manager, ECO

Measures already in place:

- Employees where informed and warned against indiscriminate tree cutting and animal hunting.

Table 3: Environmental Quality Management Plan

Impacts	Description	Mitigation measures	Project phase	Responsibility
Operation phase				
Odour generation	-Animal rendering and hides processing may result in foul odour smells.	• Ensuring collection of waste on time • General maintenance of waste ponds	Operation	ECO
Noise pollution	-Truck and machinery operating on site	• Machinery operation and truck movements should only be done during the day between 8:am to 5pm	Operation	Site Manager ECO
Surface water pollution	-Hydrocarbons from stationery vehicles -Workshop oil spillages -Wastewater from ponds	• All stationery vehicles and trucks on site to be provided with drip trays. • Workshop area should be bunded and surfaced with waterproof cement • The wastewater ponds should be regular maintained and lining repaired if any leakages are detected. • Water quality testing of a nearby spring.	Operation	ECO

Soil contamination and erosion	-Hydrocarbons from stationery vehicles -Workshop oil spillages	• All stationery vehicles and trucks on site to be provided with drip trays. • Workshop area should be bunded and surfaced with waterproof cement • Emergency spillage containment kits should be available on site	Operation	ECO

Measures already in place:

- One of the Industrial shells floor is cracked and needs to be repaired to prevent soil and groundwater pollution

Table 4: Waste Management Plan

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Generation of waste	-During the operation phase, litter in the form of papers and plastics is likely to be produced. -In addition, effluent waste from skin processing is anticipated. -Generated effluent waste is manged by ponds on site, an additional pond will be added if necessary. -It was however, observed that there is a considerable high volume of solid waste from the site as well.	• Strictly, no burning of waste on the site • There are five skip containers on site for general waste, hazardous waste and animal remnants such as hides, bones, fats, etc. Once the containers are full, rent a drum collects them for disposal.	Operational phase	Site manager, ECO

Measures already in place:

- Regular inspection of the site
- Employees conduct the cleaning works
- Skip Containers
- Environmental Audits
- Waste handling contractor

Risk of Occupational Health and Safety

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Risk of OHS	-Occupational exposures are normally related to noise effects, Electrocution, Slip and Falls, Occupational dermatitis and psychological pressure	• Frequent distribution of protective equipment to employees (helmets, gloves, respirators, work suits, goggles and safety shoes where applicable). • Train workers how to use adequately the equipment • Trainings on occupational health and safety • Safety talks to be done every day before commencement of work • Formulation of a safety health and environment workers committee • Implementation of Behaviour Based Safety System • Regular (once a year) medical check-ups • First Aid kits to be available at the site • There is need to install safety signs on site	Operation phase	Site manager, ECO

		• Provision of firefighting equipment on site • There is need to install safety signs in relation to risks associated with operations • Safety performance board should also be erected ton ensure that safety records are kept every day.		

Measures already in place:

- Personal Protective clothing

Economic Impacts

Table 5: Employment creation

Impacts	Description	Enhancement Required	Monitoring	Project Phase	Responsibility
Employment creation	Fifteen employees are permanently working on site. It is also essential to note that other companies work as contractors and subcontractors hence creating employment.	• When recruiting, gender equality must be ensured • Equity, transparency, to be put into account when hiring and recruiting • Implementation of training programs so as to train the unskilled workers in order for them to enhance their performances and to gain more knowledge that they might demonstrate at other levels in future.	Number of locals employed	Operation phase	Anpro Admin

Table 6: Government revenue

Impacts	Description	Enhancement Required	Monitoring	Project Phase	Responsibility
Payment of taxes	The proponent pays tax to the government which indirectly benefits the whole country.	• The proponent should pay tax as stipulated by the law of Namibia.	Checking tax payment end of year	Operation	Anpro Admin

3. ENVIRONMENTAL MONITORING AND CONTROL

3.1. ENVIRONMENTAL MONITORING AND CONTROLL

3.1.1. OVERVIEW

The following management plans need to be implemented during operation and decommissioning of the animal rendering and skins processing facility and its associated infrastructure envisaged

- **Waste Management**

1. Temporary storage of waste from plant upgrade and normal operational activities will be through the use of skip containers.
2. Hazardous waste will be separated from domestic waste and stored is demarcated bins.
3. Hazardous waste bins will be stored on a hard-standing surface to prevent ground pollution.
4. Safe disposal certificate will be obtained from the sub-contractor appointed for the removal of hazardous waste, and will be in adherence to the EMA Act
5. The contractor shall respect the property and rights of the landowners and occupiers at all times and shall treat all such persons with courtesy.
6. Access over land, the integrity of fences, the closure of gates, control of veld fires, littering, dust control, noise abatement, harassment of animals, sedimentation and contamination of surface and ground water, damage to landscape and vegetation, and all such environmental matters, shall be controlled as far as practical by the contractor in the best interests of Anpro Hides and Skins.

- **Complaints Register**

7. The proponent shall establish and maintain a register for periodic review by the Project Management Team that logs all complaints raised by I&APs about the construction and operational activities.
8. The register shall be regularly updated and maintain records, including the name of the complainant, his/her domicile and contact details, the nature of the complaint and if any action was taken to rectify the problem.

- **Rehabilitation Plan**

9. The contractor shall restore the construction footprint during plant upgrade to the natural contours of the ground and shall allow normal surface drainage, as far as practical.

10. The contractor shall prevent concentrated runoff along, or next to, the construction footprint, and shall do so by shaping the land, establishing vegetation, and taking other appropriate measures to absorb and disperse runoff.
11. In places where erosion control is required, including gullies, watercourses, large depressions, and steep slopes, the contractor shall construct diversion banks across the construction footprint to divert the flow of water away from the construction area and into the natural drainage courses.

- **Operational Management Plan**

12. Regular monitoring must be conducted during the operation to ensure that rehabilitation measures have been successful, and to determine whether any unstable cut and fill area need to be stabilized, especially after heavy rains.
13. A clean-up procedure will be conducted on a regular basis in order to ensure that litter, oil spills etc., are cleaned timeously and pollution of the watercourse is minimized.
14. Noise pollution emanating from the operation of the facility, affecting sensitive receptors will be mitigated if deemed necessary, through the construction of an earth berm or planting absorbent vegetation along the route.
15. Storm water management structures must be cleaned and maintained on a regular basis in order to minimize erosion that can cause siltation of aquatic systems. This will require regular inspections of the storm water infrastructure to confirm its functionality.
16. Waste water will be sampled for quality regularly to ensure that there is no groundwater and surface water pollution occurring.
17. Occupational health and safety systems are crucial and thus a system will have to be implemented and managed by a Safety officer appointed by Anpro Hides and skins.

- **External Auditing**

The key to a successful EMP is an appropriate monitoring and review to ensure effective functioning of the EMP and to identify and implement corrective measures in a timely manner. In the event where discrepancies are identified, the problem must be investigated and attended to. All the results obtained during environmental monitoring must be documented for audit purposes.

During Operation Audits will also be undertaken by an appointed consultant, in addition every quarter from the awarding of the Environmental Clearance Certificate a report will be compiles on environmental performance. This will be followed with bi-annual reports to MET: DEA on project operations during construction and operational phases. It is imperative to understand a clearance certificate is valid for 3 years only, after which a renewal will have to be applied for

along with performance report over the past years in terms of environmental compliance to existing legislation and this EMP.

Table 7: Environmental Monitoring Schedule

IMPACT	RECEPTORS	TYPE OF MONITORING	FREQUENCY
Ground water contamination	Underground aquifers	Groundwater monitoring sampling for pollution from borehole water and a nearby spring	Quarterly
Fire and explosion	Environment	Regular inspections should be carried out to inspect and test firefighting equipment.	Quarterly
		Fire drills	Twice a year
O.H.S	Employees	Site inspection Conducting Hazard and Risk Identification Safety procedures evaluation. Health and safety incident monitoring	Weekly
Noise	Employees	Observation of on-site noise levels by the Site manager and reporting to the ECO Quarterly.	Weekly
Air quality (Dust and Odour)	Employees	Regular visual inspection A complaint register regarding emissions/smell should be kept and acted on if it becomes a regular complaint.	Weekly
Generation of waste	Land	Site inspection on housekeeping	Weekly
Cumulative impact	Environment	Regular inspection	Weekly

4. CONCLUSIONS

The above Updated Environmental Management Plan for the continued operation of the existing animal rendering plant and the addition of a skin processing facility, if properly implemented, help to minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. The Environmental Management Plan should be used as an on-site reference document during operation and perhaps decommissioning phase. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Recommendations

- Anpro Hides and Skins must appoint ECO to monitor the site quarterly/year
- Anpro Hides and Skins should appoint SHE consultant to train employees on HSE and come up with a SHE policy for the company.
- Environmental rehabilitation and securing obsolete pits are recommended.
- General site cleanliness should be ensured and strict environmental monitoring schedule to ensure that the operations will not pose environmental threats to nearby farm owners.

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