forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

APPLICATION FORM FOR EXCLUSION OF WASTE STREAM OR PORTION OF WASTE STREAM FROM THE DEFINITION OF WASTE IN TERMS OF GN 715 OF 18 JULY 2018.

	(For official use only)
File Reference Number:	12/9/11
NEAS Reference Number:	
Date Received:	

Application for exclusion of waste stream or portion of waste stream in terms of the National Environmental Management: Waste Act, 2008(Act No.59 of 2008), as amended.

Kindly note that:

1. This application form is current as of 18 July 2018. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.

2. The application must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing.

3. Where applicable **black out** the boxes that are not applicable in the form.

4. Incomplete applications may be returned to the applicant for revision.

5. The use of the phrase "not applicable" in the form must be done with circumspection. Should it be done in respect of material information required by the competent authority for assessing the application, it may result in the refusal of the application as provided for in the Regulations.

6. This application must be handed in at the offices of the relevant competent authority as determined by the Act and regulations.

7. Unless protected by law, all information filled in on this application will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this application on request, during any stage of the application process.

Queries must be addressed to the contact hereunder:

Departmental Details

Postal address:
Department of Environment, Forestry and Fisheries
Attention: Director: Licensing
Private Bag X447
Pretoria
0001

Physical address:
Department of Environment, Forestry and Fisheries
Environment House (473 Steve Biko Rd, corner Steve Biko and Soutpansberg Rds)
Arcadia X6
PRETORIA
0002

Application queries should be directed to the Directorate: Licensing on:

Tel : 012 3999 791 Email: Lmahlangu@environment.gov.za

COMMENCEMENT: Has the activity (ies) commenced: Yes or No **NO**

If yes, When (provide the Year, Month and Date):

WASTE STREAM/PORTION OF WASTE STREAM

The bottom ash coming from the incinerator unit where chicken mortalities will be incinerated as and when they become available

BENEFICIAL USE

Use of the bottom ash from the incinerator as a source of fertiliser on cultivated land belonging to the farming operation

SITE GPS CO-ORDINATES

Please provide the geographic co-ordinates of **all corners** of the waste generating site; in degrees, decimal minutes, and seconds for all sites (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site). Provide geographic coordinates for all corners of the facility (ies) ONLY THE FORMAT PRESCRIBED (e.g. 60^0 29' 30" Latitude; 34^o 20' 15" Longitude)

CORNER	LATITUDE			LONGITUDE		
#1	26	26	49.04	26	17	43.43
#2	26	26	48.73	26	17	37.01
#3	26	26	52.91	26	17	36.66
#4	26	26	53.85	26	17	29.44
#5	26	27	04.93	26	17	29.92
#6	26	27	04.56	26	17	37.33
#7	26	26	58.10	26	17	37.00
#8	26	26	57.64	26	17	43.83
Incineration unit to be installed						
Incinerator Unit	26	26	53.84	26	17	36.84

The chicken houses of the WeeBee Boerdery operation with the incinerator unit to be installed in the middle as indicated. [Cemented area of ± 84m²]

1. BACKGROUND INFORMATION

Applicant:	WP Hugo / WeeBee Boerdery (Edms) Bpk		
Trading name (if any):	WeeBee Boerdery		
Contact person:	Mr Leibrandt du Plessis (Son of the owner Mr WP Hugo)		
Physical address:	Farm Malgasfontein, 15km south of Coligny Town on the R503		
Postal address:	Box 400, Coligny		
Postal code:	2725		
Telephone:	018 673 0205	Cell:	082 572 6428
E-mail:	wphugo@netactive.co.za aanvoor@gmail.com	Fax:	
SAWIS registration number:			
Nearest town or districts:	Coligny Town – North West Ngaka Modiri Molema District		

2. DETAILED DESCRIPTION OF WASTE GENERATING PROCESS (Attach supporting illustrations)

Supporting documents attached?	**Yes**	**No**
Production Process Flow Chart	X	
Waste Classification	Hazardous 2b	
Chemical and technical specification[1] (pre-beneficiation)	X	
Chemical and technical specification (post beneficiation)	X	
Risk Assessment Report	X	
Risk Management Plan	X	

As per DFFE Waste Classification & Management Regulations [Dr Shauna Costly]

Hazardous Waste 2(b)

- Expired; spoilt or **unusable** hazardous waste
- General Waste (excluding domestic waste) which contains **hazardous** waste

[1] Chemical and technical specifications must include the following:
- Leaching potential
- Long term stability and functionality
- Reactivity with environmental factors
- Storage requirements (to be included in the Risk Assessment and Risk Management Plan)

3. DECLARATIONS

3.1 The Applicant

I, R Colyn obo WeeBee Boerdery / WP Hugo_ declare that I -

- am, or **represent**[2], the applicant in this application;
- will provide the Minister with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred, in respect of the undertaking of any process required in terms of the Regulations; and
- hereby indemnify the Government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant is responsible for in terms of these Regulations;
- will perform all other obligations as expected from an applicant in terms of the Regulations;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 14(1) of these regulations and is punishable in terms of regulation 14(2) of these Regulations.

Signature of the applicant[3]/ **Signature on behalf of the applicant:**

GECS for WeeBee Boerdery / WP Hugo

Name of company (if applicable):

2023/09/02

Date:

Signature of the Commissioner of Oaths:

A Badenhorst

Name of the Commissioner of Oaths:

2/9/23

Date:

Designation:

Official Stamp:

ANDRIËTTE BADENHORST
Kommissaris van Ede : Ex Officio
Praktiserende Prokureur S.A.
Waterpoortstraat 1125
Faerie Glen 0081

[2] If this is signed on behalf of the applicant, proof of such authority from the applicant must be attached.
[3] If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority.

POWER OF ATTORNEY

I/We Wouter Peter Hugo / Reinhardt Jean-Pierre du Plessis ID: 5502025112087 · 8611075056081
as the land owner and operator of the

farming operation on the property known as Farm MALGASFONTEIN – Coligny district t/a WeeBee Boerdery Edms Bpk do

hereby grant Power of Attorney to:-

Messrs. Green Environmental Consulting Services / Mr Pieter Colyn

to sign and lodge the required documents on our behalf for the:-

1. Integrated Waste Application to the DFFE (Scoping EIA)
2. Air Emissions License (AEL) to the DFFE

Signed this 10 day of August 2023 at Coligny. NorthWest Province.

Signature Witness

Signature

CALCULATION OF BOTTOM ASH VOLUMES

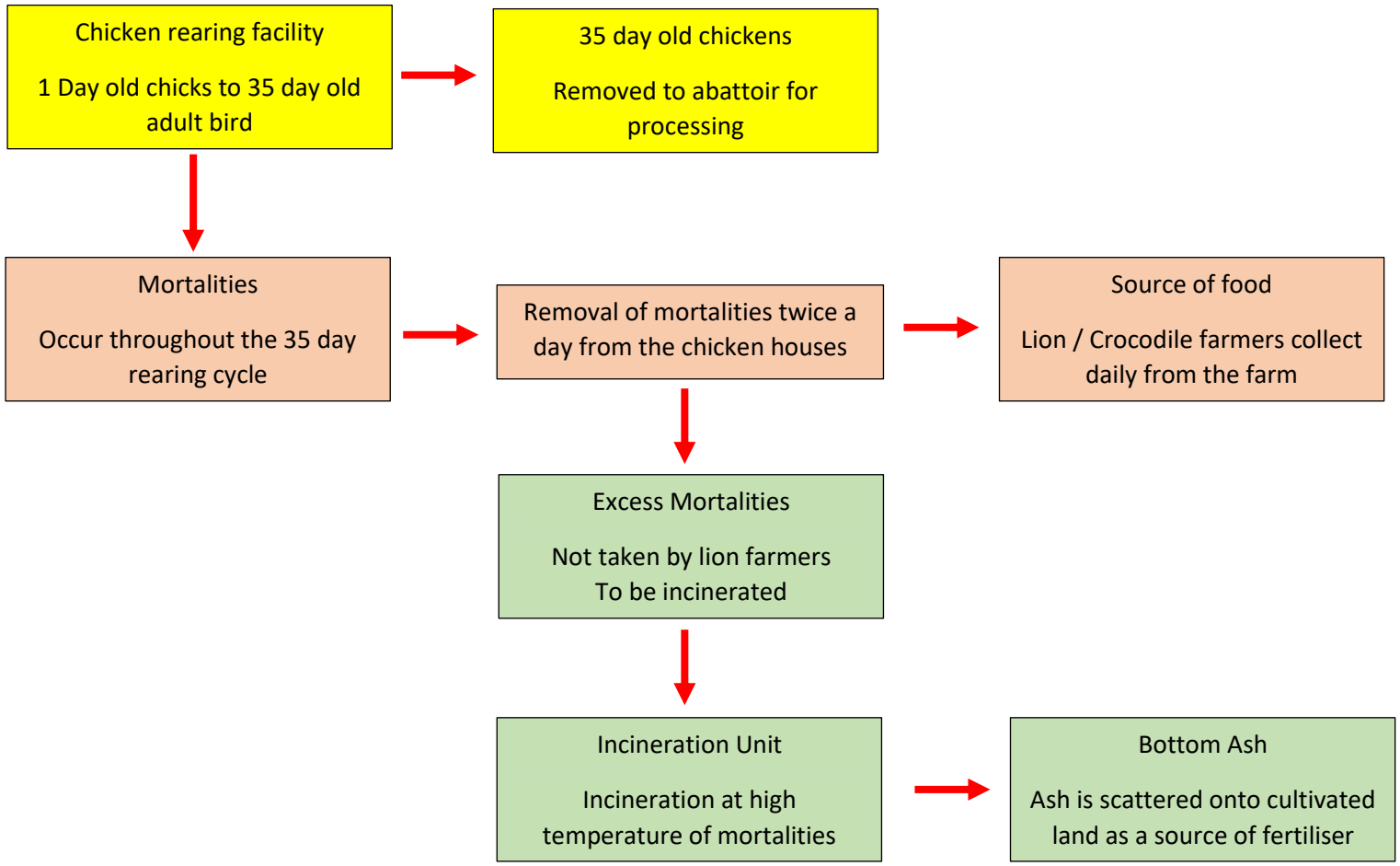
The following figures are from a trial test run was conducted on 26 June 2023 [as approved by NW-DEDECT]

Incinerator Capacity:	500 Kg per day
Coal Consumption per hour:	50 Kg per hour
Weight of mortalities:	50 Kg
Time for incineration:	30 minutes
Bottom ash:	11.4 Kg
Incineration temperature:	>450º C
Exit temperature of stack	300º C
Exit velocity	3 cub per second (with air blower running into the oven)

In a normal working day of 8 (eight) hours, the incinerator will be able to incinerate and generate the following bottom ash, as based on the test results of 26 June 2023.

Mortality weight:	800kg
Coal consumption:	400kg
Running time:	8 hours
Bottom ash:	182 kg

FLOW CHART of the HANDLING of CHICKENS and MORTALITIES



Chemical Composition of chicken

What is the chemical composition of chicken meat?

A paper by Jorge Soranio (Chemical Composition and Nutritional Content of Raw Poultry Meat, 2010) gives the composition of chicken as 74.6% water, 1% ash, 12.1% protein, 11.1% lipid (fat) and 1.2% carbohydrate.

[https://www.scielo.br]

Chemical in Chicken Meat

Taurine is found only in animal-sourced foods, such as fish, seafood, meat, poultry, and dairy products.

What does Taurine do in the human body

The human body uses taurine for actions in cells. One example is that taurine is used for energy production. Taurine also helps the body process bile acid and balance fluids, salts and minerals, among other actions.

[RED BULL Energy Drink uses Taurine in its formula]

INCINERATION

What is incineration

Incineration is the process of burning hazardous materials at temperatures high enough to destroy contaminants. Incineration is conducted in an "incinerator," which is a type of furnace designed for burning hazardous materials in a combustion chamber.

What is the main function of an incinerator

An incinerator is a furnace for burning waste.

Advantages of incineration

The total mass of the remaining garbage can be reduced by up to 85 percent, while its volume may shrink by as much as 95 percent.

Chemical composition of Chicken Waste through incineration

COAL

Ash from burnt coal assists minimally in soil consistency and pH level but no real nutritional value.
National Institute of Health (.gov)
[https://www.ncbi.nim.nih.gov > articles > PMC9102058]

CHICKEN

Bone ash, the residue left when chicken carcasses are burned, consists mainly of calcium phosphate and is used in commercial fertilizer
[https://en.wikipedia.org]

FERTILISER

Fertilisers – Bone ash can be used alone as an organic fertiliser as it contains micronutrients like magnesium, zinc and iron which boosts plant health and benefit soil's microbial growth. It improves the overall structure and quality of the soil, which in turn improves the quality of plants and final produce.
[https://www.thespruce.com >bone ash benefits to farming>]

What is bone ash?

Bone ash is a white material produced by the calcination of bones. Typical bone ash consists of about 55.82% calcium oxide, 42.39% phosphorus pentoxide, and 1.79% water. The exact composition of these compounds varies depending upon the type of bones being used, but generally the formula for bone ash is: $Ca_5(OH)(PO_4)_3$. Bone ash usually has a density around 3.10 g/mL and a melting point of 1670 °C (3038 °F). Most bones retain their cellular structure through calcination.
[https://Wikipedia.org/wiki/Bone_ash]

LEACHING POTENTIAL

National Library of Medicine
Environ Eng Sci: 2018 July 1; 35[7]: 728 – 738
Ncbi.nlm.nih.gov/pmc/articles/PMC6034394
Ranking Coal Ash Materials for their potential to leach Arsenic and Selenium: Relative Importance of Ash Chemistry and Site Biogeochemistry.
Grace E Schwartz [et al]

In the above quoted paper as undertaken in the USA and leaching of coal ash the investigation concluded as follows:

Results of the ash rankings based on leachable As and leachable Se (per g ash) were generally consistent between the tests despite the relative simplicity of the protocols. This result suggests that a 24-h single point leaching test of leachable As and leachable Se content could give a good first estimate of leaching potential and may present a way to identify ash samples for more in depth risk assessment. Yet, to develop a true understanding of the magnitude of potential leaching, it is crucial to select a leaching test that adequately mimics the ash disposal or spill scenario.

Our results demonstrate that geochemical conditions greatly impact the overall amount of contaminant leached for both As and Se, and the selection of just one test to assess leaching potential could result in an underestimate of leaching if that test is not representative of disposal conditions. Current disposal options for coal ash consist of wet storage in impoundments and dry landfilling in either monofills or, less-frequently, in mixed compartments with municipal waste. Each of these disposal scenarios presents a unique geochemical environment that varies from site to site. Given these complexities, perhaps the best approach for assessing coal ash disposal risk is to move toward a situational framework. Just as the National Pollution Discharge Elimination System (NPDES) permits in the United States are written specifically for individual outfalls from power plants, a coal ash disposal plan could also be tailored for the specific conditions of the coal ash disposal sites. In this way, disposal requirements could be written for specific elements of interest given the typical coal source, combustion parameters, air pollution capture devices of the particular plant, and disposal track for solid wastes. Site-specific, situational risk assessments present the best option for ash materials, especially for contaminants such as As and Se that are known to undergo multiple biogeochemical transformations that influence mobility and exposure.

RISK ASSESSMENT REPORT

WeeBee Boerdery at Coligny: The incineration of chicken mortalities and the use of the bottom ash as a beneficial fertiliser on cultivated land belonging to the farming operation

a) OVERVIEW

The WeeBee Boerdery operation on the farm Malgasfontein, situated 15Km south of the town of Coligny is a large scale chicken rearing operation.

As with any chicken rearing farm operation, mortalities are encountered during the 36 days that the day old chicks grow in the chicken houses, until their transportation to an abattoir for slaughter and final processing.

Currently the mortalities over 14 days in age / size are taken away by contracted 3rd party users such as lion farms; crocodile farms or piggeries. However, a number of lion farms have closed down over the last couple of years, and as the activity of dumping mortalities into the ground is a frowned upon activity, the need arose for another type of disposal of the mortalities, incineration being the selected way. WeeBee Boerdery decided to actively find a solution and ensure its compliance with relevant legislations by opting to install an incineration that will handle mortalities as and when the time comes that 3rd party end users of the mortalities can no longer take over the mortalities. The decision was made for incineration.

b) Where does the Risk Assessment become effective?

This report is to assess possible risks once the incineration has taken place and the bottom ash is being handled; transported and eventually spread as a source of fertiliser on cultivated lands belonging to the farm.

Although the HAZARDOUS WASTE has been transformed through the incineration process all handling should be carried out as if it is still an active HAZARDOUS ITEM
Safety masks and gloves will provide additional protection

i) Bottom ash at the incinerator

During the incineration process the ash formation will be continuous. Care should be taken hen opening the incineration chamber door as the air blower is always in operation and the force of moving air may result in ash being expelled through the door.

**** Masks and gloves must be worn during incineration**

Risk Assessment BEFORE and AFTER mitigation

RISK / ISSUE / THREAT	L	M	H
a) Inhalation of air born ash from the chamber		X	
Wearing of mask and tuning off the blower when opening the chamber for inspection of the process	X		

ii) Bottom ash being collected and stored

From time to time during the incineration stage bottom ash will need to be removed. Such ash must be handled with care and the placement of the ash must be in an enclosed trailer bed or bin in order to store is safely, awaiting spreading. Wind should not be able to lift the ash and spread it into surrounding environment. Once cooled such ash should be covered with a sturdy tarpaulin to prevent wind spreading

**** Mask and gloves must be worn**

**** Storage container must be covered to protect against wind**

Risk Assessment BEFORE and AFTER mitigation

RISK / ISSUE / THREAT	L	M	H
a) Inhalation of ash from the chamber		X	
Wearing of mask and gloves will prevent getting in contact with the ash	X		
b) Open containers will allow possible wind dispersing of the ash into the environment			X
Closed bins or covering of the ash with a tarpaulin will prevent ash becoming air borne and being inhaled	X		

iii) Bottom ash being transported

When moving the bottom ash to the fields where it is set to be spread, such moving must be in an enclosed container and / or the container must be covered with a tarpaulin to prevent spreading into the general environment. Avoid ash being dispersed by wind.

**** Masks and gloves to be worn**

**** Covered / enclosed container when transporting**

Risk Assessment BEFORE and AFTER mitigation

RISK / ISSUE / THREAT	L	M	H
a) Transportation winds will disperse the ash into the air and may be inhaled by workers on site		X	
Covered containers [lids] or covering with a tarpaulin will prevent wind making the ash airborne, Wetting down the ash before transportation will also assist in preventing it becoming airborne	X		

iv) Handling of bottom ash

The ash, although transformed through high heat during incineration must always be handled as if it is still in its original hazardous state. The greatest problem comes from contact, be it through inhalation of ash dust or onto the hands and for that reason the wearing of mask and gloves are essential.

**** Mask and gloves to be worn**

Risk Assessment BEFORE and AFTER mitigation

RISK / ISSUE / THREAT	L	M	H
a) Inhalation and skin contact		X	
Wearing of mask and gloves essential.	X		

v) Spreading of bottom ash

It is inevitable that during the spreading of the bottom ash that some "dust cloud" will be created by the rotating arms of the spreader system. Although this takes place in areas where there are very few if any people, those doing the spreading should at all times be wearing masks and gloves.

**** Mask and gloves to be worn**

Risk Assessment BEFORE and AFTER mitigation

RISK / ISSUE / THREAT	L	M	H
a) Inhalation and skin contact		**X**	
Wearing of masks and gloves essential	**X**		
b) Ash dust will be generated and go into the air		**X**	
Wetting down of the ash pre-spreading will assist in limiting air borne particles from going around	**X**		

c) Conclusion

Bottom ash can easily become airborne and the chances for inhalation or skin contact is possible. However, with the correct precautions; training and enforcement of strict health and safety measures, the staff working with the bottom ash can be safeguarded as can the environment.

It is the opinion of the EAP for the application that the risk, in terms of human health and environmental safety, is minimal, provided that:

- Safety gear in terms of masks and gloves are provided to staff;
- That all staff working with the bottom ash be trained in its handling at the different stages of interaction; and
- That transportation be performed with the ash either enclosed or watered down.

RP Colyn
EAP – EAPSA 2020/1358

RISK MANAGEMENT PLAN

WeeBee Boerdery at Coligny – North West Province

Location:
WeeBee Boerdery on the farm Malgasfontein, 15 km south of the town of Coligny in North West Province.

Activity:
The use of bottom ash from an incineration unit used for the incineration of chicken mortalities on the farm Malgasfontein.

Waste Classification:
Certain criteria needs to be considered in order to determine the actual classification i.e.

- This is not domestic waste;
- Animal [chicken] waste is rated as hazardous;
- Transformation / treatment of the hazardous waste through incineration / heat;
- Any waste that has been treated must be reclassified.

Conclusion:
The original waste [chicken mortalities] is seen as hazardous waste. Therefore the incineration of chicken mortalities is in fact ***"the incineration of a hazardous substance".***
As per GHS-SANS 10234 ***"any waste that has been treated must be reclassified"*** and as such once the incineration process has been completed, the bottom ash [the new waste stream] may well be classified as ***"business waste not containing hazardous waste or chemicals"*** and may therefore be safely used as an alternative benefit to standard fertiliser to cultivated land.

Handling & Storage of Mortalities

- No waste heaps may be formed by collecting mortalities over a number of days before incineration;
- Any waste held over from one day to another must be kept in a freezer unit in order to minimise the formation of smells; flies or disease;
- No mortalities may be left in the open where other birds [i.e. crows] may have access and possibly spread diseases.

Handling & Storage of bottom ash

- All bottom ash must be recorded [i.e. date of incineration and weight] before kept in a container for spreading on the cultivated lands;
- No bottom ash, containing any bone or bone fragments may be used as fertiliser. Such ash must be subjected to a second incineration cycle to ensure total burn of all bones of the mortalities;
- Transportation of bottom ash must be done in an enclosed truck to prevent wind blowing the ash at random into the receiving environment;
- No bottom ash may be dumped or stockpiled and must at all times by inside a container.

Record keeping

As per the Regulations proper record keeping is required and all record sheets should reflect the following:

- Category of waste as per the Waste Information Regulations;
- Weight of mortalities being incinerated;
- Date and time of incineration;
- Weight of bottom ash after incineration;
- Re-classification of the new waste stream {i.e. waste after incineration];
- Date of the spreading of the incinerated bottom ash onto the cultivated lands;
- Details of the person responsible for management of waste from the time of removal of mortalities to the time that it is spread on the land;
- All records must be kept for at least 5 (five) years and in date sequence to allow for speedy auditing by the relevant departments when they come on site to do environmental audits.

ADDITIONAL RISK & CARE

The commercial farming of large numbers of poultry carries many risks, in particular disease and mortalities. Care of the flock is paramount, daily and hourly monitoring is an absolute essential; timeously removal of mortalities is key to maintaining a proper health regime; the correct disposal of mortalities ensures containment or possible spread of disease or the development of additional health problems. For the above mentioned reasons, and many others, a strict bio-security regime is required.

The following are essential in maintaining a health flock:

Removal of mortalities

- Twice daily scanning of the rearing floor ensures timeously removal of any mortality on site from the other birds;
- Collection of mortalities at a central point in a special container ensures strict control over possible disease or spreading of disease;
- Contracted removal of mortalities to lion farms; pig farming; crocodile farming is essential in ensuring that mortalities are taken from site on a daily basis;
- Sterilisation of all equipment used in the picking and removal of mortalities is essential to ensure that no disease or dangerous pathogens are spread from one chicken house to another. In fact each house should have its own equipment; sterilise its own equipment and never allow equipment from moving amongst the different chicken houses;
- Removal of mortalities from the farm to 3rd party end users [i.e. lion farms] are to be done by enclosed truck so as to prevent any part of the mortalities entering the receiving environment;
- Removal trucks coming on site must be disinfected as they collect mortalities from other chicken farms as well and as such can spread disease from one farm to another;
- Monitoring of strict bio-security rules and enforcement of such rules and regulations is paramount to keeping a healthy flock on site.

RP Colyn (EAP / 2020/1358)
Green Environmental Consulting Services