Chubby Chick Enterprises

Rendering Facility EIA – draft Environmental Impact Assessment Report

Locality: Potchefstroom

Departmental Ref No: NWP/EIA/62/2013

Date: 31 August 2015

SHANGONI
Management Services (Pty) Ltd

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Chubby Chick Enterprises

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Management Services (Pty) Ltd

PROJECT DETAILS

North-West Department of Rural, Environmental and Agricultural Development

Reference No.: NWP/EIA/62/2013

Project Title: Chubby Chick Rendering Facility

Project Number: FOU-POT-12-05-02

Compiled by: Lizette Crous

Date: 31 August 2015

Location: Pretoria

Technical Reviewer: Lourens de Villiers

HL de Villiers

EXECUTIVE SUMMARY

The Applicant

Cycle City (Chubby Chick Enterprises) is a poultry production company based in Potchefstroom. The company owns various chicken raising farms, both traditional broiler farms and free-range farms, in the Potchefstroom area and slaughters the chickens at their own abattoirs in Potchefstroom.

Background description

A common challenge in the poultry industry is how to dispose of poultry waste such as mortalities from the chicken farms and blood produced in the slaughtering process. A responsible and economically viable option is to process the poultry waste into a poultry by-product meal at a rendering facility. The meal can then be used as an additive in the production of animal feeds, such as cattle feed.

Project description

The Chubby Chick rendering facility has been operational since 1997 and has a Sterilisation License in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947). The facility does, however, not have a Water Use License and therefore this EIA process has been initiated. A separate Waste Management License Application process is also underway at the National Department of Environmental Affairs.

Legal requirements and legislative process

As part of the operation of the rendering facility, listed activities defined under the National Environmental Management Act, Act 107 of 1998 (NEMA, 1998) and its regulations, occur. Relevant listed activities triggered by the rendering facility are described further in this draft Environmental Impact Report (EIR) (refer to Part 1.5).

It is the intention of this draft Environmental Impact Assessment Report to provide the necessary information pertaining to the activities associated with the project, as required in terms of the Environmental Impact Assessment Regulations (EIA Regulations R543: EIA Regulations in terms of Chapter 5 of the NEMA, 1998, dated 18 June 2010). This draft Environmental Impact Assessment Report intends to highlight all information relevant to the rendering facility project.

The diagram below provides a visual representation of approach followed for the Scoping- and EIA in terms of NEMA, 1998, and the Environmental Impact Assessment Regulations, dated 2010.

Schedule	Process	Public Participation and Stakeholder Consultation
Application submission: 7 November 2013 PPP: 23/01/2014 – 03/03/2014	**Application Phase:** • Environmental Authorisation Application form • Background Information	• Submission of Application form and obtaining Project reference number from NWREAD • I&APs & Stakeholder register / database • Background Information Document distributed, newspaper advertisement and site notices placed • Telephonic and electronic notifications • I&APs and Stakeholder comments recorded
PPP review of draft Scoping report 27/05/2014 – 14/07/2014	**Scoping Phase:** • Draft Scoping Report and Plan of Study for EIA • Submission of Final Scoping Report and Plan of Study for EIA	• Letters to inform I&APs and Stakeholders of the availability of the draft Scoping Report • Draft Scoping Report for public and Stakeholder comment (available on www.shangoni.co.za) • Consultation with local authorities • Incorporation of comments and issues into Scoping Report • Final Scoping Report submission to NWREAD
Current Process	**EIA Phase:** • Specialist Studies • Impact Assessment and Mitigation measures • Draft EIA Report • Final EIA Report	• Letters to inform I&APs and Stakeholders of the availability of the draft EIA Report • Draft EIA Report for public and Stakeholder comment (available on www.shangoni.co.za) • Continued consultation with local authorities and communication to I&APs • Incorporation of comments and issues into final EIA Report • Final EIA Report submission to NWREAD
	Final Phase: • Authorities' decision-making stage	• Notify I&APs and Stakeholders of government authority's decision on the application for environmental authorisation • Available on www.shangoni.co.za

Environmental impacts associated with the project

The purpose of this document is to supply the North West Department of Rural, Environmental and Agricultural Development with the requested information pertaining to the National Environmental Management Act (NEMA), as amended, and Regulation 28 of the Environmental Impact Assessment Regulations, dated 2010. Contained in this document is a detailed investigation of the activity and potential site-specific impacts associated with the operation of the Chubby Chick rendering facility and the following proposed changes to the facility:

- A new treatment works for the wastewater generated at the rendering facility; and
- Changes to the existing wastewater treatment system, including the existing earth evaporation dam (addition of liners).

This application for environmental authorisation of the above mentioned activities entails conducting a full Scoping and Environmental Impact Assessment process. During the Environmental Scoping Report (ESR) phase and draft Environmental Impact Report (EIR) phase, the baseline potential impacts related to the operation of the rendering facility and its proposed upgrades were identified.

Regulation 31 (of Regulation 543) of the EIA Regulations, 2010, under the NEMA, 1998, requires that an Environmental Impact Report (EIR) includes an assessment of the status; extent; duration; probability; reversibility; replaceability of resources; and mitigatory potential of the major potential environmental impacts of the rendering facility and its proposed upgrades. Refer to Part 7 of this report for a detailed risk assessment.

Potential significant impacts that have been identified during the scoping and environmental impact assessment process have been listed below for the planning and design phase, the construction phase, the operational phase and the rehabilitation phase of the proposed project. Closure and decommissioning of the rendering facility is not anticipated for the foreseeable future. Should the facility close, a detailed closure and rehabilitation plan will be submitted to the North West Department of Rural, Environmental and Agricultural Development prior to decommissioning.

Planning and Design Phase

- The following impacts can be expected if proper environmental management plans are not developed and implemented:
  - Soil-, surface water- and groundwater pollution;
  - Generation of noise and subsequent nuisance to nearby landowners;
  - Generation of atmospheric emissions, dust and odours and subsequent nuisance to nearby landowners;
  - Loss or disturbance of vegetation;
  - Loss of topsoil;
  - Soil erosion;
  - Disturbance of a wetland; and

  - Contamination of surface water runoff.
- Soil, surface water and groundwater pollution during the operational phase due to inadequate design of the wastewater treatment works;
- Soil, surface water and groundwater pollution, as well as nuisance caused by odours and unsightly appearance of waste onsite, due to inadequate design of waste storage facilities and/or areas;
- Degradation and loss of a valuable resource (topsoil) through increased runoff as stormwater flows over cleared, bare areas during rainfall events, due to poor scheduling of construction activities;
- Generation of noise and nuisance to neighbours as a result of construction activities occurring during inconvenient times of the day; and
- Generation of atmospheric emissions, odours and nuisance to neighbours during the operational phase, due to inadequate design of the air treatment system (odour abatement system).

Construction Phase

- Harm to the environment in general (this can include pollution of soil and water resources, as well as harm to employees and wasteful practices in terms of resource use and waste management);
- Removal of indigenous vegetation during the construction phase;
- Disturbance or destruction of vegetation surrounding the site as a result of runaway veld fires caused by workers or contractors;
- Introduction of alien invasive plants that can impact on the hydrology and outcompete natural vegetation. Alien and invasive plant species also generally use more water than indigenous plants;
- The construction activities associated with the proposed new wastewater treatment system and upgrading the existing wastewater treatment system may disturb or destroy areas of the wetlands onsite;
- Degradation and loss of a valuable resource (topsoil);
- Erosion of cleared areas;
- Soil and surface water pollution as a result of the spillage, improper handling, storage, mixing or disposal of cement and concrete;
- Soil and surface water pollution through contaminated wash water runoff;
- Soil, surface water and groundwater pollution due to poor waste management as well as nuisance caused by odours and unsightly appearance of waste onsite;
- Soil, surface water and groundwater pollution from unsanitary conditions onsite;
- Soil, surface water and groundwater pollution as a result of poor management and accidental spills of hazardous chemical substances used onsite;
- Hydrocarbon pollution of soil, surface water and groundwater through the spilling of fuel, grease or oil or leaking equipment and vehicles;
- Ambient air quality degradation as well as disturbance and nuisance to neighbours and other sensitive receptors due to dust generation;
- Noise pollution and nuisance to neighbours;

- Wear of access roads, accidents on access roads, unpermitted transport of materials and loss of materials being transported on access roads;
- Wastage or depletion of a valuable resource (groundwater) due to inefficient or redundant usage;
- Loss of artefacts or sites protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

Operational Phase

- Harm to the environment in general (this includes pollution of soil and water resources, as well as harm to employees and wasteful practices in terms of resource use and waste management);
- Growth of alien and invasive vegetation leading to smaller habitat areas available for indigenous vegetation. Alien and invasive plant species also generally use more water than indigenous plants;
- Loss of indigenous grassland and habitats for indigenous fauna species surrounding the site as a result of runaway veld fires;
- The discharge and/or spillage of ineffectively treated wastewater into the environment can lead to further degradation of the wetland;
- Soil, surface water and groundwater pollution as well as nuisance caused by odours and unsightly appearance of waste onsite as a result of poor waste management (waste generated at the facility and not including incoming waste from the abattoirs for processing at the rendering facility);
- Soil, surface water and groundwater pollution as well as nuisance caused by odours and unsightly appearance of waste onsite as a result of poor management of incoming waste from the abattoirs (waste to be processed at the rendering facility);
- Soil, surface water and groundwater pollution from unsanitary conditions onsite;
- Soil, surface water and groundwater pollution as a result of poor management and accidental spillage of hazardous chemical substances used onsite;
- Soil, surface water and groundwater pollution through spillage of fuel, grease or oil and leaking equipment and vehicles;
- Soil, surface water and groundwater pollution due to the accidental discharge of ineffectively treated wastewater into the environment;
- Soil, surface water and groundwater pollution due to poor handling and storage of coal;
- Soil, surface and groundwater pollution as a result of poor ash management;
- Soil and surface water pollution due to the contamination of ‘clean’ stormwater in ‘dirty’ areas;
- Ambient air quality degradation as well as disturbance and nuisance to neighbours and other sensitive receptors due to dust generated from onsite traffic;
- Noise disturbance and nuisance to neighbours and other sensitive receptors due to operational activities;
- Disturbance and nuisance to neighbours and other sensitive receptors due to offensive odours generated at the rendering facility;
- Ambient air quality degradation through combustion emissions from boilers;

- Wear of access roads, accidents on access roads, unpermitted transport of materials and loss of materials being transported on access roads;
- Wastage or depletion of valuable resources (groundwater and electricity) due to inefficient or redundant usage;
- Outbreak of diseases and possible infection of workers at the facility; and
- Loss of artefacts or sites protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

Rehabilitation Phase

- Ineffective rehabilitation, including soil erosion and generation of dust; and
- Bare areas leading to soil erosion and generation of dust as a result of ineffective establishment and growth of vegetation planted during rehabilitation of disturbed areas.

Decommissioning and Closure Phase

Closure and decommissioning of the rendering facility is not anticipated for the foreseeable future. Should the facility close, a detailed closure and rehabilitation plan will be submitted to the North West Department of Rural, Environmental and Agricultural Development prior to decommissioning.

The table below summarises the impacts that have been identified and evaluated for the rendering facility and its proposed upgrades.

Table 1: A summary of the impacts associated with the operation of the Chubby Chick rendering facility and its proposed upgrades.

Potential Impact	Environmental Significance Pre Mitigation			Environmental Significance Post Mitigation		
	P[1]	M[2]	S[3]	P	M	S
General Environment						
The following impacts can be expected if proper environmental management plans are not developed and implemented: • Soil-, surface water- and groundwater pollution; • Generation of noise and subsequent nuisance to nearby landowners; • Generation of atmospheric emissions, dust and odours and subsequent nuisance to nearby landowners; • Loss or disturbance of vegetation; • Loss of topsoil; • Soil erosion; • Disturbance of a wetland; and • Contamination of surface water runoff.	3	3	M	2	2	L
Harm to the environment in general (this includes pollution of soil and water resources, as well as harm to employees and wasteful practices in terms of resource use and waste management).	3	3	M	2	2	L
Fauna and Flora (Critical Biodiversity Area 2)						
Removal and destruction of indigenous vegetation outside of the construction footprint for the wastewater treatment system.	3	2	M	2	2	L
Loss of indigenous grassland and habitats for indigenous fauna species surrounding the site as a result of runaway veld fires.	3	3	M	1	3	L
Bare areas leading to soil erosion and generation of dust.	3	2	M	2	1	L
The disturbance due to construction and earth works will create a window of opportunity for invasions by alien invasive plants. Invasion of alien plants can impact on the hydrology and outcompete natural vegetation.	3	3	M	2	2	L
Sensitive areas - Wetland						

[1] Probability
[2] Magnitude
[3] Severity

Potential Impact	Environmental Significance Pre Mitigation			Environmental Significance Post Mitigation		
	P[1]	M[2]	S[3]	P	M	S
The construction activities associated with the proposed new wastewater treatment system and upgrading the existing wastewater treatment system may disturb or destroy areas of the wetland. The construction activities may change the amount of sediment entering the water resource and result in changes to turbidity. The construction activities may change the physical structure within the water resource (habitat).	3	3	M	2	2	L
The discharge and/or spillage of ineffectively treated wastewater into the environment can lead to further degradation of the hillside seep wetland.	3	3	M	1	3	L
Topsoil						
Degradation and loss of a valuable resource (topsoil) through increased runoff as stormwater flows over cleared, bare areas during rainfall events.	3	3	M	2	1	L
Degradation and loss of a valuable resource (topsoil) due to prolonged exposure.	3	2	M	1	2	L
Erosion of cleared areas.	3	2	M	2	2	L
Ineffective rehabilitation causing soil erosion and the generation of dust.	3	3	M	2	2	L
Soil, surface water, stormwater and groundwater pollution						
Soil, surface water and groundwater pollution during the operational phase due to inadequate design of the wastewater treatment works.	3	4	H	1	2	L
Soil and surface water pollution due to the incorrect management of cement and concrete.	3	4	H	2	3	M
Soil and surface water pollution due to the release of contaminated wash water into the environment.	3	4	H	2	3	M
Soil, surface water and groundwater pollution from irresponsible waste management practices. Nuisance caused by odours and unsightly appearance of waste onsite.	3	3	M	2	2	L
Soil, surface water and groundwater pollution as a result of unsanitary conditions onsite.	3	3	M	2	2	L
Soil, surface water and groundwater pollution. Toxic contaminants such as metal ions (e.g. copper, lead and zinc) and hydrocarbons can detrimentally impact upon the water quality of the area.	4	3	H	2	3	M
Soil, surface water and groundwater pollution from waste generated at the rendering facility. Nuisance caused by odours and unsightly appearance of waste onsite.	3	4	H	2	2	L
Soil, surface water and groundwater pollution from incoming waste from the abattoirs and chicken farms. Nuisance caused by odours and unsightly appearance of waste onsite.	3	4	H	2	2	L
Soil, surface water and groundwater pollution due to the irrigation or discharge of ineffectively treated wastewater.	3	4	H	2	3	M

Potential Impact	Environmental Significance Pre Mitigation			Environmental Significance Post Mitigation		
	P[1]	M[2]	S[3]	P	M	S
Soil, surface water and groundwater pollution due to the incorrect management of coal.	3	2	M	2	2	L
Coal ash contains heavy metals and metalloids such as, Pb and Se. These contaminants can leach into groundwater discharging at discharge zones into spruits and rivers. Deterioration of surface water quality within the adjacent wetland area and downstream water resources may take place as a result of affected surface water runoff generated at the coal ash storage area.	5	4	H	2	4	M
Soil and surface water pollution due to the contamination of clean stormwater runoff.	4	3	H	2	2	L
Atmosphere and Noise						
Generation of noise and nuisance to neighbours as a result of construction activities occurring during inconvenient times of the day. Noise disturbance and nuisance to neighbours and other sensitive receptors due to operational activities.	3	3	M	2	2	L
Ambient air quality degradation as well as disturbance and nuisance to neighbours and other sensitive receptors due to dust generated from onsite traffic.	4	2	M	2	2	L
Disturbance and nuisance to neighbours and other sensitive receptors due to offensive odours generated by the rendering facility.	5	4	H	3	3	M
Ambient air quality degradation though combustion emissions from the coal-fired boilers.	5	4	H	5	3	H
Infrastructure						
Wear of access roads, accidents on access roads, unpermitted transport of materials and loss of materials being transported on access roads.	4	2	M	2	2	L
Resource usage						
Wastage or depletion of a valuable resources (groundwater and electricity) due to inefficient or redundant usage.	3	3	M	2	1	L
Hygiene						
Outbreak of diseases and possible infection of workers at the facility.	3	3	M	2	2	L
Heritage						
Loss of artefacts or sites protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).	3	3	M	3	2	M

Appropriate mitigation measures will assist in minimising the potential impacts on the surrounding environment during the construction and operational phases of the proposed project. A draft Environmental Management Programme (EMP) has also been compiled, with the aim of serving as a working document in order to manage and/or mitigate the identified potential impacts. Refer to Appendix F for a copy of the draft EMP.

The main mitigation measures that should be applied to the proposed project include the following:

- Environmental Awareness Training for all contractors and workers;
- A complaints register must be kept on site to record and deal with complaints from people in the vicinity of the site;
- Before any construction takes place the proposed area for the proposed new wastewater treatment works will be pegged out. All construction activities will be limited to within these areas in order to reduce the footprint disturbed and avoid impact on the wetland;
- Wastewater generated at the rendering facility must be treated to a quality that complies with the Department of Water Affairs' General Limit standards for discharge into a water resource or irrigation of crops. Only treated wastewater of this quality may be discharged into the environment or irrigated onto crops;
- All ponds/dams and/or channels must be lined with a 1.5mm HDPE liner or impermeable concrete floor to prevent leaching of potential contaminants and nutrients into the groundwater;
- Soil, stormwater and groundwater pollution must be prevented through the correct handling, storage and disposal of cement, concrete, waste and chemicals;
- A Water Use Licence must be obtained for all water use activities occurring onsite;
- Adequate firefighting equipment must be available on site;
- The conditions of the rendering facility's Atmospheric Emission Licence must be adhered to;
- Implement the recommendations of the Odour Management Plan;
- All recommendations in the Stormwater Management Plan must be implemented;
- Implement the Water Monitoring Programme;
- If any sites, features or objects are found during site clearance, all activities must cease and a heritage expert must be contacted to investigate the site;
- The provisions of the National Norms and Standards for the Storage of Waste must be implemented, where required;
- Regular site inspection by supervisors;
- Process incoming waste in a timely manner;
- Schedule activities that will generate the most noise during times of the day that will result in least disturbance to neighbours;
- Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource;
- The coal ash must be disposed of or managed in accordance with its waste classification; and
- Implementation of effective and sustainable rehabilitation and remediation practices.

Based on the outcomes of the Environmental Impact Assessment, conducted as part of this full Scoping and Environmental Impact Assessment process, as well as the alternatives assessment, the following recommendations are made:

1. **The proposed project/activity (the upgrading and licensing of the rendering facility as well as the construction of the new wastewater treatment works) should be authorised and allowed to proceed on the preferred site (26°47'16.80"S; 27°08'58.39"E);**
2. The mitigation measures proposed in this report and the draft Environmental Management Programme must be implemented during all phases of the proposed project;
3. It is assumed that the Wastewater Treatment Works will operate as designed and will effectively treat the rendering facility wastewater to a quality that complies with the Department of Water Affairs' General Limit Standards for irrigation and/or discharge of wastewater into the environment;
4. It is assumed that the wastewater volumes generated at the rendering facility will not exceed the design capacities of the Wastewater Treatment Works;
5. It is assumed that the mitigation measures proposed in this report and the draft Environmental Management Programme will be correctly implemented by the applicant and that they will be effective;
6. A communications pathway must be established that would allow the designated ECO to accept and deal with stakeholder complaints;
7. Proposed mitigation measures should be incorporated as far as possible into the operational plan for the rendering facility; and
8. Strict monitoring and enforcement of requirements of the EMP must be undertaken to ensure that contractors and operators adhere to these requirements.

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APPENDIX G - Other Information
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- EAP CVs

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DEFINITIONS

Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of

(i) the land, water and atmosphere of the earth;

(ii) micro-organisms, plant and animal life;

(iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and

(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Aspects

Elements of an organisation's activities, products or services that can interact with the environment.

Environmental Degradation

Refers to pollution, disturbance, resource depletion, loss of biodiversity, and other kinds of environmental damage; usually refers to damage occurring accidentally or intentionally as a result of human activities.

Environmental Impacts

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

Environmental Impact Assessment

A study of the environmental consequences of a proposed course of action.

Environmental Impact Report

A report assessing the potential significant impacts as identified during the environmental impact assessment.

Environmental impact

An environmental change caused by some human act.

Land use

The various ways in which land may be employed or occupied. Planners compile, classify, study and analyse land use data for many purposes, including the identification of trends, the forecasting of space and infrastructure requirements, the provision of adequate land area for necessary types of land use, and the development or revision of comprehensive plans and land use regulations.

Pollution Prevention

Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Public Participation Process

A process of involving the public in order to identify needs, address concerns, in order to contribute to more informed decision making relating to a proposed project, programme or development.

Topography

Topography, a term in geography, refers to the "lay of the land" or the physio-geographic characteristics of land in terms of elevation, slope and orientation.

Vegetation

All of the plants growing in and characterising a specific area or region; the combination of different plant communities found there.

Waste

Waste is unwanted or undesired material left over after the completion of a process. "Waste" is a human concept: in natural processes there is no waste, only inert end products.

Water Resource

- a river or a spring;
- a natural channel in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which, water flows;
- any collection of water which the Minister may declare to be a watercourse; and
- surface water, estuaries and aquifers (underground water).

All water bodies in the hydrological cycle, including underground water, are regarded as water resources.

Water Course

- a river or spring;
- a natural channel or depression in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which water flows; and
- any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998).

Water Use

Water use includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.

Wastewater

Wastewater is water containing waste, or water that has been in contact with waste material.

- Wastewater includes
  - domestic wastewater
  - biodegradable industrial wastewater
  - industrial wastewater.

Wetland

Means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

ABBREVIATIONS

BID	-	Background Information Document
CRR	-	Comments and Responses Report
DWS	-	Department of Water and Sanitation
EAP	-	Environmental Assessment Practitioner
EIA	-	Environmental Impact Assessment
EIR	-	Environmental Impact Report
EMF	-	Environmental Management Framework
EMP	-	Environmental Management Programme
GN	-	Government Notice
I&AP	-	Interested and Affected Party
NEMA	-	National Environmental Management Act, (Act No. 107 of 1998), as amended
NWREAD	-	North West Department Rural, Environmental and Agricultural Development
R	-	Regulation

1. INTRODUCTION

This draft Environmental Impact Assessment Report forms part of an application for environmental authorisation for the Chubby Chick rendering facility on Portion 198 of the farm Wilgeboom 458 IQ. The application is made in terms of the EIA Regulations of 18 June 2010 under the National Environmental Management Act, 1998 (Act No. 107 of 1998).

The application process is undertaken on behalf of the applicant, Cycle City (Pty) Ltd – Trading as Chubby Chick Enterprises, by Shangoni Management Services (Pty) Ltd. Shangoni was appointed, as independent environmental practitioner, to assist the applicant in undertaking the process as prescribed in the previously mentioned environmental legislation.

An application to undertake an Environmental Impact Assessment (full Scoping and Environmental Impact Reporting) process was submitted to the identified competent authority (the North West Department of Rural, Environmental and Agricultural Development). The Department subsequently registered the project and the formal process was thereby initiated. A Scoping Report was submitted to the North-West Department of Rural, Environmental and Agricultural Development, and all the findings from the Scoping- and EIA processes are included in this EIR report.

This draft Environmental Impact Assessment Report is divided into the following parts:

- Part 1: Introduction (including a description of the project);
- Part 2: Nature and extent of the environment affected by activity;
- Part 3: Applicable legislation and guidelines;
- Part 4: Public Participation Process;
- Part 5: Need and desirability for the project;
- Part 6: Consideration of alternatives;
- Part 7: Environmental Impact Assessment;
- Part 8: Environmental Impact Statement; and
- Part 9: Conclusion.

1.1 Process followed

1.1.1 The EIR in terms of the requirements of NEMA, 1998

Regulation 31(2) of the EIA Regulations, 2010 under the NEMA, 1998, lists aspects that must be included in EIA Reports (EIRs). The table below indicates the parts where information has been provided as part of this EIR.

Table 2: The EIR in terms of the EIA Regulations, 2010, under the NEMA, 1998

Regulation No:		Description	EIR Part
R543 Regulation 31(2)(a)		Details of the Environmental Assessment Practitioner (EAP).	Part 1 & Appendix G
	(i)	Details of the EAP who prepared the report.	
	(ii)	Details of the expertise of the EAP to carry out the environmental impact assessment.	
R543 Regulation 31(2)(b)		A description of the proposed activity.	Part 1
R543 Regulation 31(2)(c)		A description of the property on which the activity is to be undertaken and the location of the activity on the property.	Part 1
R543 Regulation 31(2)(d)		A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	Part 2
R543 Regulation 31(2)(e)		Details of the public participation process conducted:	Part 4 & Appendix E
	(i)	Steps undertaken in accordance with the plan of study.	
	(ii)	List of persons, organisations and organs of state that were registered as interested and affected parties.	
	(iii)	A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments.	
	(iv)	Copies of any representations and comments received from registered interested and affected parties.	
R543 Regulation 31(2)(f)		A description of the need and desirability of the proposed activity.	Part 5
R543 Regulation 31(2)(g)		A description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity.	Part 6, 7 & 8
R543 Regulation 31(2)(h)		An indication of the methodology used in determining the significance of potential environmental impacts.	Part 7

Regulation No:		Description	EIR Part
R543 Regulation 31(2)(i)		A description and comparative assessment of all alternatives identified during the environmental impact assessment process.	Part 6 & 8
R543 Regulation 31(2)(j)		A summary of the findings and recommendations of any specialist reports or report on a specialised process.	Part 2 & 7
R543 Regulation 31(2)(k)		A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures.	Part 7
R543 Regulation 31(2)(l)		An assessment of each identified potentially significant impact, including:	Part 7
	(i)	Cumulative impacts.	
	(ii)	The nature of the impact.	
	(iii)	The extent and duration of the impact.	
	(iv)	The probability of the impact occurring.	
	(v)	The degree to which the impact can be reversed.	
	(vi)	The degree to which the impact may cause irreplaceable loss of resources.	
	(vii)	The degree to which the impact can be mitigated.	
R543 Regulation 31(2)(m)		A description of any assumptions, uncertainties and gaps in knowledge.	Part 9 (if applicable)
R543 Regulation 31(2)(n)		A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Part 9
R543 Regulation 31(2)(o)		An environmental impact statement which contains:	Part 8
	(i)	A summary of the key findings of the environmental impact assessment.	
	(ii)	A comparative assessment of the positive and negative implications of the proposed activity and identified alternatives.	
R543 Regulation 31(2)(p)		A draft environmental management programme containing the aspects contemplated in Regulation 33 of the EIA Regulations, 2010.	Appendix F
R543 Regulation 31(2)(q)		Copies of any specialist reports.	Appendix D
R543 Regulation 31(2)(r)		Any specific information that may be required by the competent authority.	Part 4.3.7

Regulation No:	Description	EIR Part
R543 Regulation 31(2)(s)	Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	None at present

** No specific requests have been received from the competent authorities to date.*

1.2 Details of the project applicant

Name of Applicant	Cycle City (Pty) Ltd. – Trading as Chubby Chick Enterprises
Postal Address	PO Box 288, Potchefstroom, 2520
Telephone No.	018 285 2048
Fax No.	018 297 3573
Farm name and portion on which the activities take place	Portion 198 of the farm Wilgeboom 458 IQ
Title Deed Number and 21 Digit Code	T0IQ00000000045800198
Co-ordinates of operation	26°47'16.80"S; 27°08'58.39"E

1.3 Appointed Environmental Assessment Practitioner

Name of firm	Shangoni Management Services (Pty) Ltd.	
Postal address	PO Box 74726 Lynwood Ridge Pretoria 0040	
Telephone No.	012 807 7036	
Fax	012 807 1014/086 643 5360	
E-mail	lizette@shangoni.co.za	
Team of Environmental Assessment Practitioners on project		
Name	**Qualifications & experience to conduct the EIA***	**Responsibility**
Mr. H.L. de Villiers	• Bsc. (Hons) (PU for CHE) MSc.(UP) • More than 10 years' experience conducting Environmental Impact Assessments and Waste Management License Applications	EIA Project Leader and Co-ordinator

Ms. Lizette Crous	• MSc. Environmental Management (University of London) • More than 4 years' experience conducting Environmental Impact Assessments and Waste Management License Applications	EAP
Ms Karien Venter	• B.Sc. (Hons) Environmental Management • Less than 1 years' experience conducting Environmental Impact Assessments and Waste Management License Applications.	Junior EAP

* Detailed CVs for the project team are attached (Appendix F).

Lourens de Villiers – Project Director

Lourens holds a M.Sc. Water Resource Management degree from the University of Pretoria and has ten years' experience in the environmental field. He specialises in compilation and management of Environmental Impact Assessments (EIAs) for commercial, industrial, agri-industrial, mining and residential developments. Lourens is also actively involved in third party ISO 14001 certification audits in the mining and industrial sectors.

Lizette Crous – Environmental Practitioner

Lizette obtained a B.Sc. degree specialising in Biodiversity and Ecology from the University of Stellenbosch. She has also completed a M.Sc. in Environmental Management at the University of London and is responsible for Waste Management License Applications and Environmental Impact Assessments (EIA) at Shangoni.

Karien Venter – Environmental Practitioner

Karien obtained a B.Sc. degree in Biological Science with Zoology and Physiology as majors. She went on to complete her B.Sc. Honors degree in Environmental Science at the North-West University majoring in Aquatic Ecosystem Health. She is currently assisting in Waste Management License Applications and Environmental Impact Assessments (EIAs) at Shangoni.

1.4 Current situation

The Chubby Chick rendering facility has been operational since 1997 and has a Sterilisation License in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947). The facility does, however, not have a Water Use License and therefore this EIA process has been initiated. A separate Waste Management License Application process is also underway at the National Department of Environmental Affairs.

The rendering industry, as a whole, has a positive impact on the environment by converting highly-perishable poultry waste that cannot be consumed by humans, into a valuable commodity (COWI

Consulting Engineers and Planners AS, 2000) that can be used in the production of animal feeds. This decreases the amount of waste that needs to be disposed of at local landfill/hazardous waste disposal sites and also eliminates the possibility of decomposing waste polluting the soil, surface- and ground-water of the area.

Rendering facilities may, however, also produce negative environmental impacts such as:

- Atmospheric pollution;
- Water pollution;
- Soil degradation; and
- Resource consumption.

The Chubby Chick rendering facility is an independent rendering facility situated on Portion 198 of the farm Wilgeboom 458 IQ, North West Province. The facility is an inedible rendering facility, i.e. it produces a product that is not intended for human consumption. The facility has been operational since 1997 and has a Sterilisation License in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947).

The facility currently receives chicken waste [blood, feathers, chicken pieces, fat and intestines (mala)] from the two Chubby Chick abattoirs in Potchefstroom and also receives chicken mortalities from the Fourie's Poultry (part of Cycle City) chicken farms on a daily basis. The facility operates 24/7 and processes the poultry waste into a high-protein poultry by-product meal (PBPM). A maximum of 60 tons of poultry waste is processed per day. The facility has a Sterilisation License in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) for its high-protein, poultry by-product meal. The meal is used as a protein source in the production of animal feeds. The current by-product meal production process, a batch rendering process, is shown in Figure 1 and summarised below:

- The facility has two sections separated by a concrete partition. The "dirty" area is from the waste unloading area to where the waste is loaded into the pressure cooking vessels. The "clean" area is from where the cooked product is loaded out of the cooking vessels to where the finished product is bagged;
- Chicken waste (feathers, chicken pieces, fat and intestines) from the Chubby Chick abattoirs and mortalities from their chicken farms are brought to the rendering facility (hereafter referred to as "the facility"). The waste is stored within the rendering facility building, in the intake area;
- Blood is brought from the abattoirs in a tanker and is pumped into a $10m^3$ holding tank at the rendering facility;
- Waste and blood is loaded into the three pressure cooking vessels. Steam is generated in two coal-fired boilers for use in the sterilisation process. Each boiler has its own stack. Boiler ash is removed from the site to a disposal facility;
- Within the cooking vessels, a vacuum is created and the waste is cooked and sterilised using pressure and high temperatures;

- Steam is vented from the cooking vessels and passes through a collection tank where solids settle out. From there, the air passes through two condensers. Water from the condensers flows to a trench/earthen canal from where the water is pumped into an earth evaporation dam to the north-east of the facility. Non-condensibles, such as VOCs (volatile organic compounds), pass from the condensers to the biofilter. In the biofilter, the air passes through a biofilter medium within which microorganisms reside. The odour causing particles are a food source for the microorganisms and are therefore consumed by the microorganisms. In this system, the odourous atmospheric emissions generated at the rendering facility (during the cooking process) are captured and degraded (consumed);
- The sterilised product is removed from the cooking vessels when the moisture content has decreased to the required percentage;
- The product passes through a hammermill and screen. In this step any unwanted solids, such as stones, are removed from the product; and
- The product is then placed into bags and removed from the site to be used in the production of animal feeds.

The rendering facility obtains electricity from Eskom, but also has a backup generator on site. There is also an aboveground, bunded diesel tank.

Water used at the facility for the boilers, washing, toilets and showers is obtained from a borehole on a neighbouring property owned by the applicant (Portion 0 of the farm Vogelzang 467 IQ). The water is pumped to the rendering facility via a pipeline. Wastewater is produced from the following:

- Raw material liquids;
- Cooking condensate;
- Washing and sanitation of the plant;
- Boiler water usage (Sindt, 2006); and
- Sewage and grey water from the shower facilities.

Per day, approximately 55m^3 of wastewater is generated from the rendering process. The wastewater currently flows into trenches/earthen canals and is then pumped to an earth evaporation dam to the north-east of the rendering facility. A new wastewater treatment system is being proposed to effectively treat the wastewater to the Department of Water Affairs' General Limit standards for the irrigation of wastewater onto land and/or its discharge into a water resource (GN 665 of 6 September 2013). A separate system (French drain) has been installed for the handling of the sewage and grey water from the shower facilities. A Waste Management License application is being conducted for all waste related activities onsite.

The facility currently employs 25 people. Employees are houses on the premises in accommodation separate from the rendering facility.

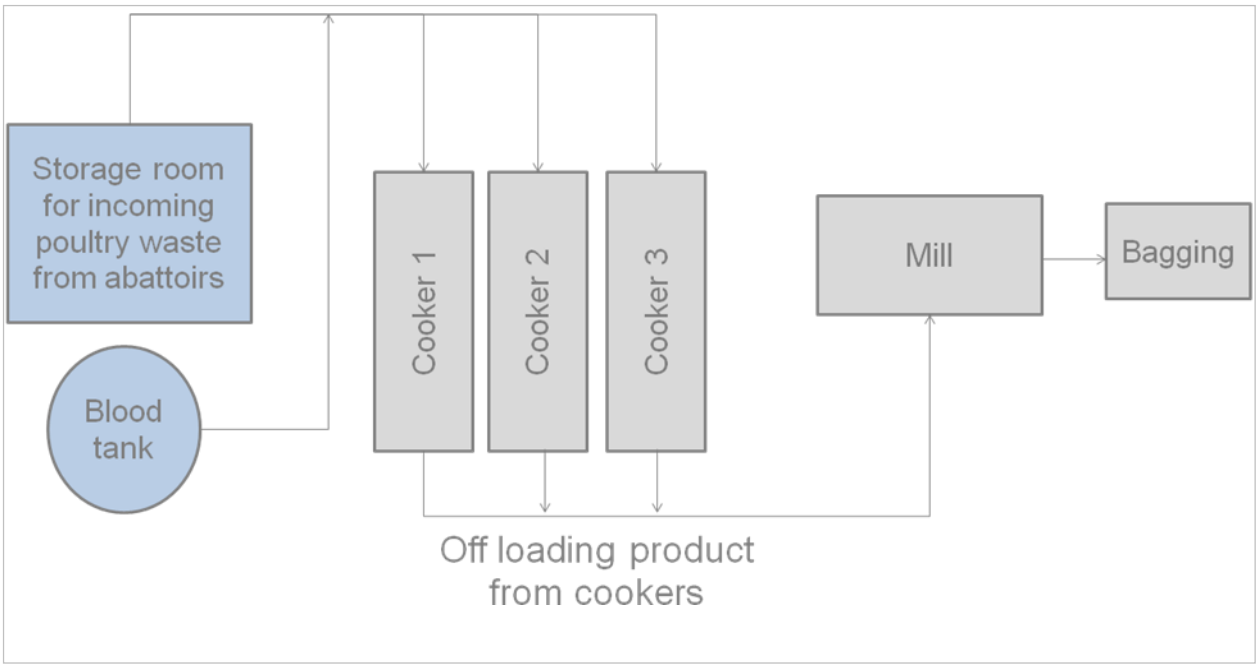


Figure 1: Rendering process flow

Table 3: Land owner of the current operation

Farm Name	Title deed	Owner
Portion 198 of the farm Wilgeboom 458 IQ	T101109/1996	Cycle City (Pty) Ltd. [part of Fourie's Poultry Farms (Pty) Ltd.]

1.5 Proposed activities

Chubby Chick is proposing a new wastewater/effluent treatment plant to effectively treat the wastewater from the rendering plant. The treatment plant will be installed below the rendering plant (downslope of the rendering plant) and will treat rendering wastewater and wash water to a quality that complies with the General Limit standards of the Department of Water Affairs for the irrigation of wastewater onto land and/or its discharge into a water resource (GN 665 of 6 September 2013).

The modular treatment plant will be constructed on a cement plinth (12m x 10 m), isolated with a 30 cm bund wall and a roof for weather protection. It will consist of five polypropylene tanks forming the pre-treatment system with the main purpose of pH control.

The treatment process will occur as follows: Rendering facility wastewater will pass through an existing 1.5mm sieve bend screen where solids are removed. From there, the wastewater will enter into the first polypropylene tank (tank 1) where the pH will be lowered. Thereafter, the wastewater will flow into two digestion tanks (tanks 2 and 3) where agitation will take place. Gravity flow will be used as far as possible to decrease electricity usage. The wastewater will leave tank 3 and enter tank 4, where the pH will be adjusted to neutral. From tank 4, the wastewater will flow into the flocculation/settling tank (tank 5). Here, excess floating solids will be removed and sent back to the rendering facility to be fed into the

rendering process. The final step consists of a chlorine disinfectant system that will treat the wastewater to the required standards prior to the treated water being pumped to the holding dam (existing earth evaporation pond). The earth evaporation pond will be lined with a HDPE liner to prevent seepage of treated wastewater into the ground. Treated water will be pumped from the holding dam for use in the irrigation of crops on the property. The process flow is visually shown in Figure 19. Should irrigation of wastewater not be possible, provision will be made to enable the discharge of the treated wastewater into a water resource, according to the Department of Water Affairs' General Limit standards. An alarm system will be installed in case of system failure.

The above listed changes require a water use license and registration, together with other water use activities, such as the storage of water, occurring at the facility. The relevant listed activities triggered in terms of the EIA Regulations of 18 June 2010 are given in the table below. The project includes the compilation and submission of a water use license application to the Department of Water and Sanitation.

*Table 4: Listed activities in terms of Government Notice No R.545 of 18 June 2010**

Number and date of the relevant notice	Activity No	Description
GN. No. R 545, Listing Notice 2 of 18 June 2010	5	The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.

* Activity 26 of GN. No. R 545, Listing Notice 2 of 18 June 2010 was originally included in this application for Environmental Authorisation, but has subsequently been removed, as the Atmospheric Emission Licence for the rendering plant has been issued by the North West Department of Rural, Environmental and Agricultural Development on the 4th of August 2015.

1.5.1 Proposed locality

The rendering facility is situated on Portion 198 of the farm Wilgeboom 458 IQ, in close proximity to Potchefstroom.

The site lies within the Tlokwe City Council's jurisdiction. This local municipality forms part of the Dr. Kenneth Kaunda District Municipality, within the North West province.

Table 5: Administrative and water management boundaries

Province	North West Province
District Municipality	Dr. Kenneth Kaunda
Local Municipality	Tlokwe City Council
Ward	2
Department of NW READ Local Office	Potchefstroom
Catchment Zone	C23L
Water Management Area (if applicable)	Upper Vaal Water Management Area

Table 6: Direction and distance to the nearest towns

Closest town	Distance from site	Direction from town to site
Potchefstroom	6.9km	South-east
Parys	31km	West

The site locality map is given below as Figure 2 and is also attached under Appendix A. Site photographs are provided below (refer to Figure 3 to Figure 18 and Appendix B).

1.5.2 Land tenure and use of immediately adjacent land

Land use surrounding the site includes agricultural land, farm houses, a restaurant, go-cart route and tourist accommodation.

Details of adjacent land owners of the rendering facility are listed in the table below. Refer also to Section 4 for more detail regarding the Public Participation Process.

Table 7: Details of adjacent land owners to the site

Owner	Address or property description
F.D. Grimbeek	Portion 6 Wilgeboom
Herman Pretorius	Portion 50 Wilgeboom
J.P. Moolman	Holding 51A Wilgeboom
A.B. Hill	Portion 177 Wilgeboom
P.M. Fouché	Holding 52 Wilgeboom

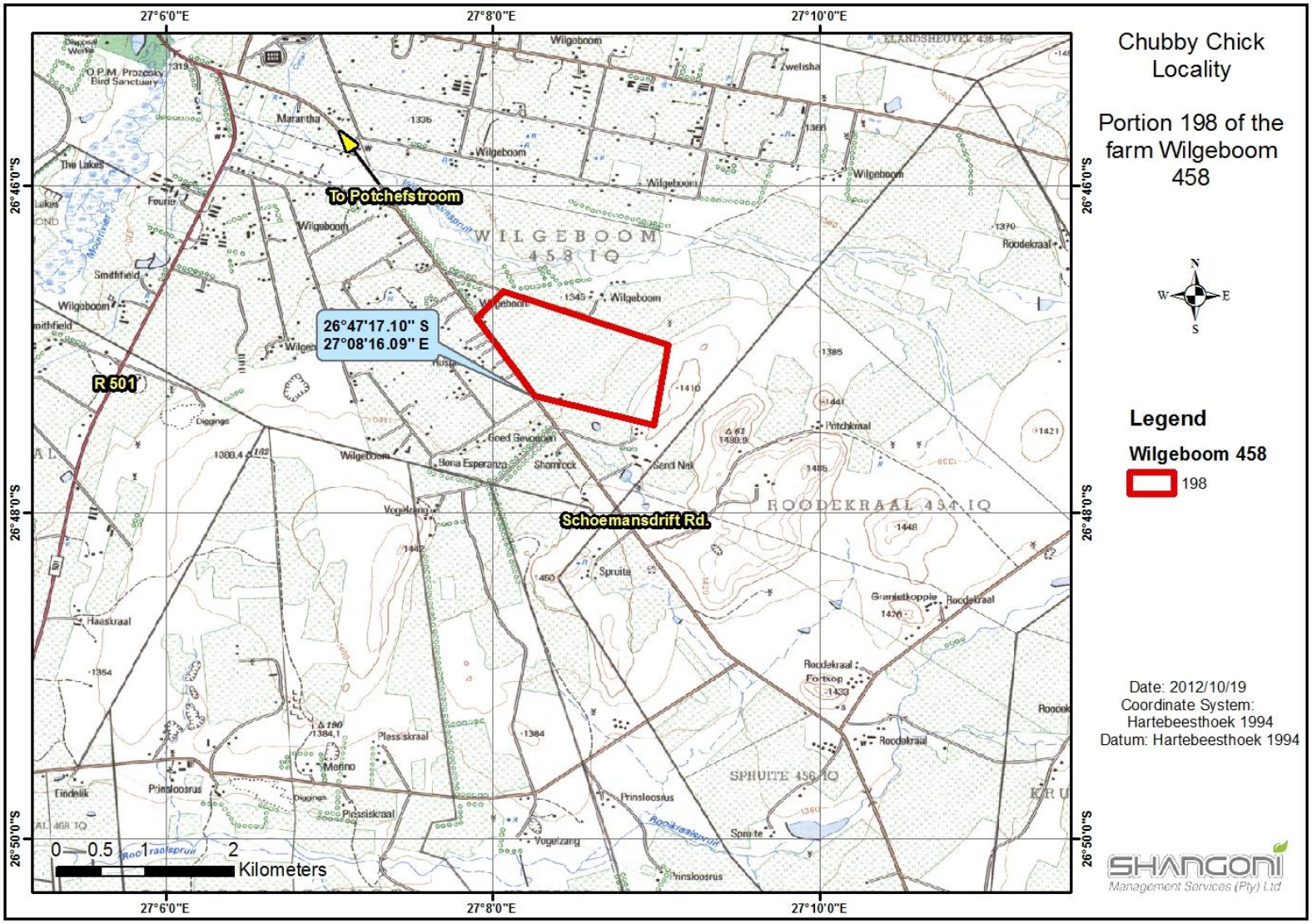


Figure 2: Locality Map

Figure 3: View of the rendering facility from the North-west

Figure 4: JoJo tanks used to store borehole water from an adjacent property

Figure 5: Backup generator and bunded diesel storage tank

Figure 6: The coal storage bunker

Figure 7: One of two coal fired boilers used to generate steam on site

Figure 8: The two broiler stacks

Figure 9: Trucks and tankers are used to bring abattoir waste and mortalities to the facility

Figure 10: The waste intake area

Figure 11: The blood storage tank

Figure 12: The cooking vessels and offloading area (where the product is removed from the vessels)

Figure 13: The condensers

Figure 14: The bagging area

Figure 15: The product storage and dispatch area

Figure 16: Removal of boiler ash

Figure 17: The existing wastewater evaporation pond

Figure 18: Employee housing

1.5.3 Design

The process flow diagram for the wastewater/effluent treatment plant for the rendering facility is shown in the figure below. The existing earth wastewater evaporation dam will also need to be lined as part of the upgraded wastewater management system. Designs for the liners are not available as yet.

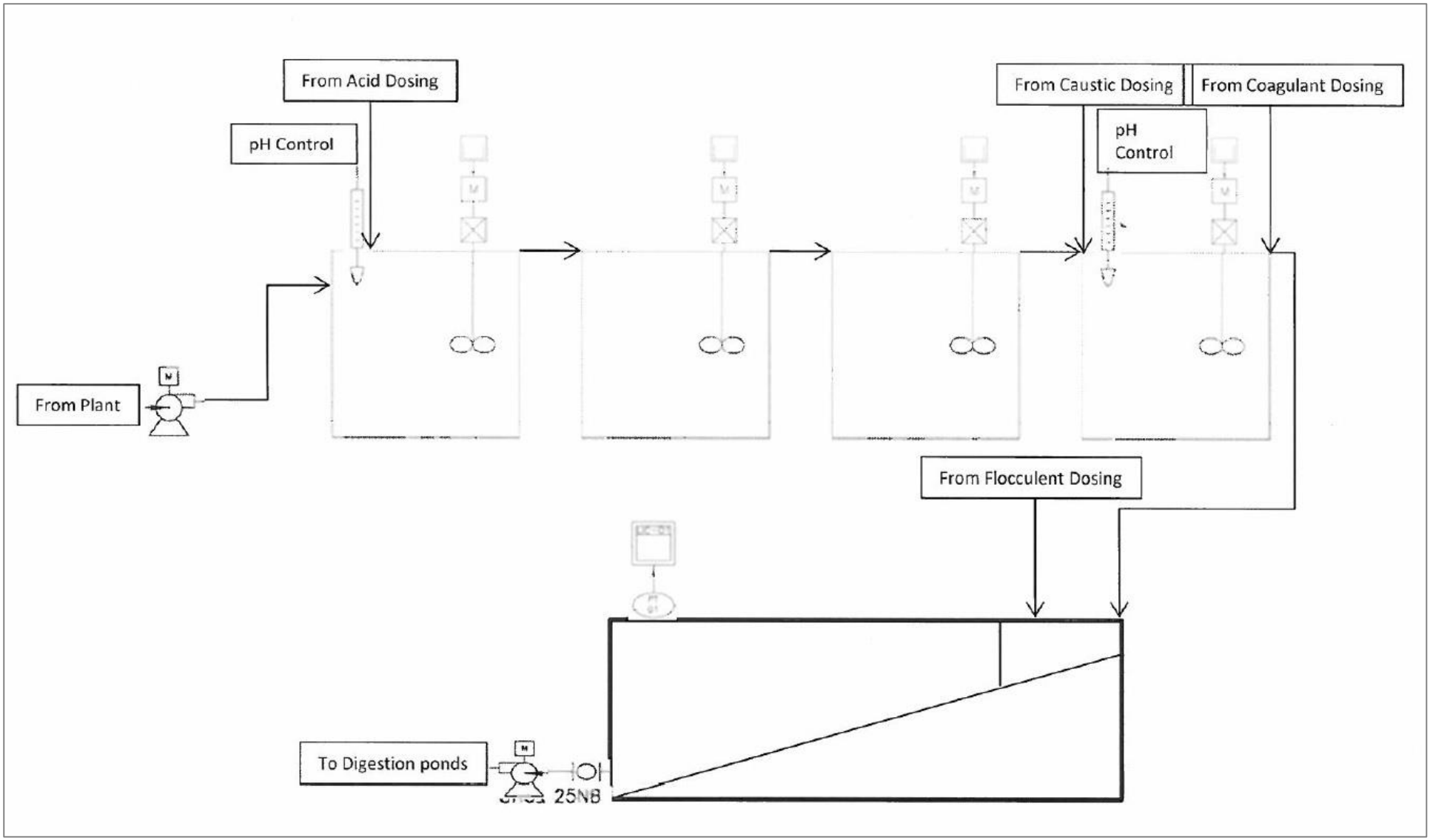


Figure 19: Effluent treatment plant process diagram

2. NATURE AND EXTENT OF THE ENVIRONMENT AFFECTED BY ACTIVITY

The following section provides a description of the baseline or status quo environment as well as the social-economic parameters that characterise the region and study area, and is derived from various specialist studies as well as data sources including aerial photographs, topo-cadastral maps and national and provincial databases.

2.1 Geology

As shown in the figure below, the property is underlain by two geological units. The eastern part of the site, where the rendering facility is located, is underlain by siliciclastic rocks of the Magaliesberg Formation, Pretoria Group. The Magaliesberg formation consists mostly of quartzite and mixed felsic rocks, mostly consisting of diabase. The central and western portion of the property is underlain by fine-grained felsic rocks of the Vaalian Erathem.

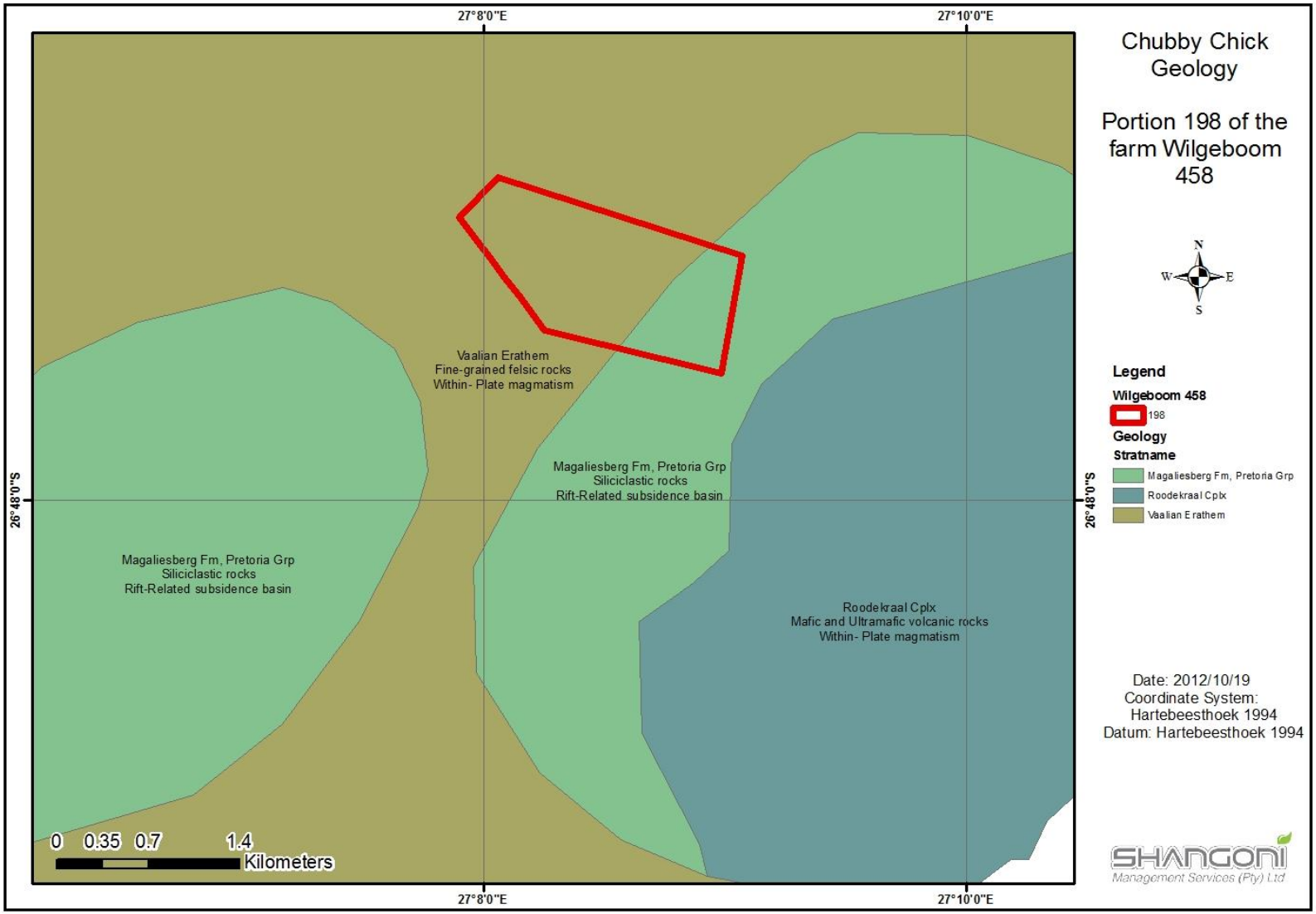


Figure 20: Geology of the site

2.2 Regional climate

2.2.1 Rainfall

The site lies within a warm temperate region with strongly seasonal summer rainfall and very dry winters (Mucina & Rutherford, 2006). The mean annual rainfall for the site ranges between 401-800mm. The minimum and maximum long-term temperature range for the site is given in the figure below.

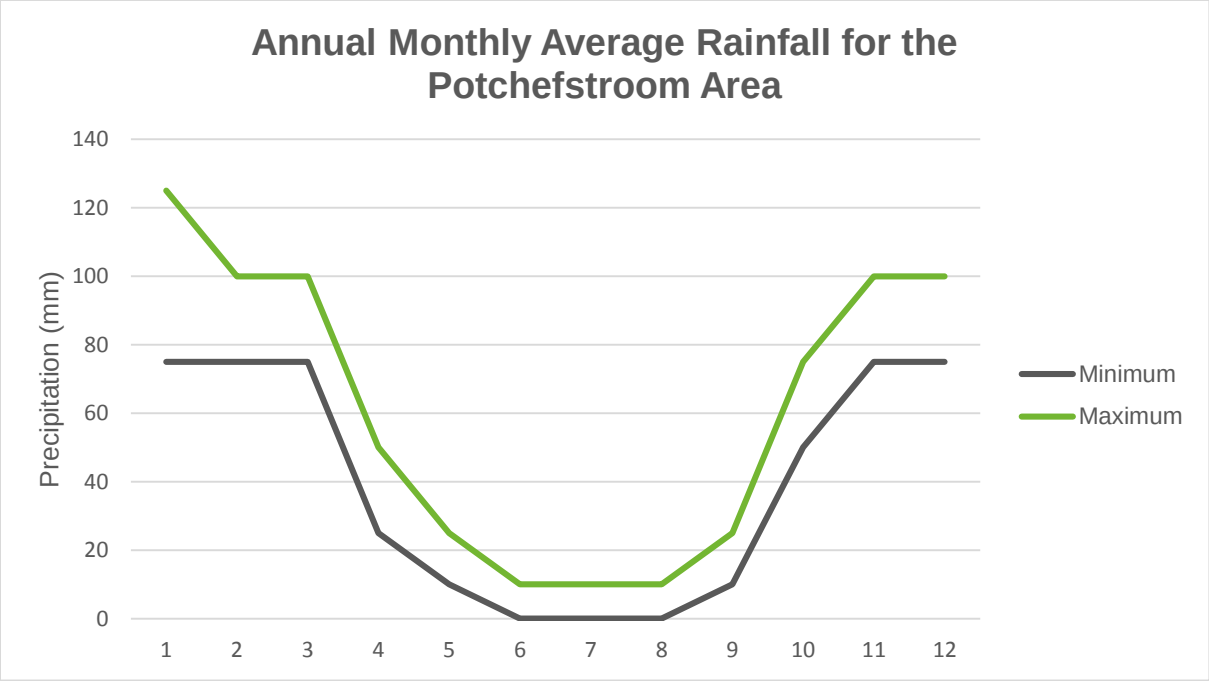


Figure 21: Long-term rainfall range for the area (AGIS Comprehensive Atlas, 2007)

1.1.1 Temperature

Summer temperatures in the area are high and severe frost is frequently experienced during winter months. The mean annual maximum temperature for the site ranges between 27.1 and 31˚C while the mean annual minimum temperature for the site ranges between 0.1 and 4˚C. The minimum and maximum temperature range for the site is given in the figure below.

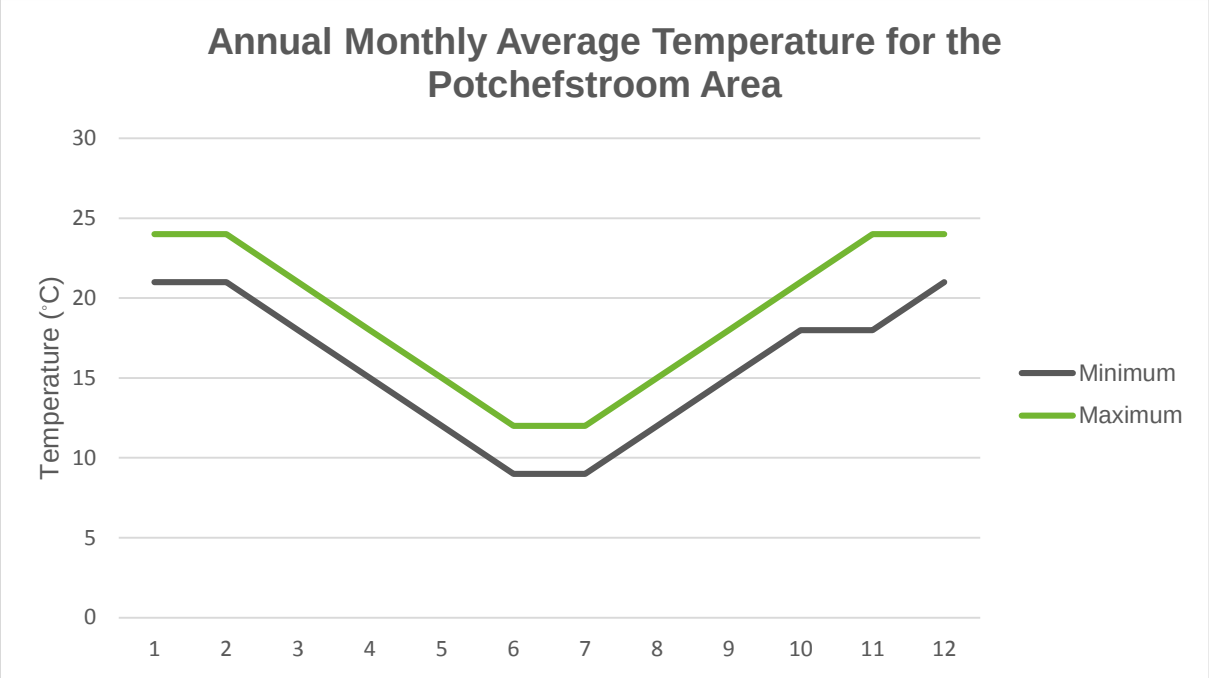


Figure 22: Long-term temperature range for the area (AGIS Comprehensive Atlas, 2007)

2.2.2 Wind

The site is approximately 6.9km from Potchefstroom. Wind data from the Potchefstroom weather station has therefore been used for this application. The wind roses are given in the figures below (www.windfinder.com).

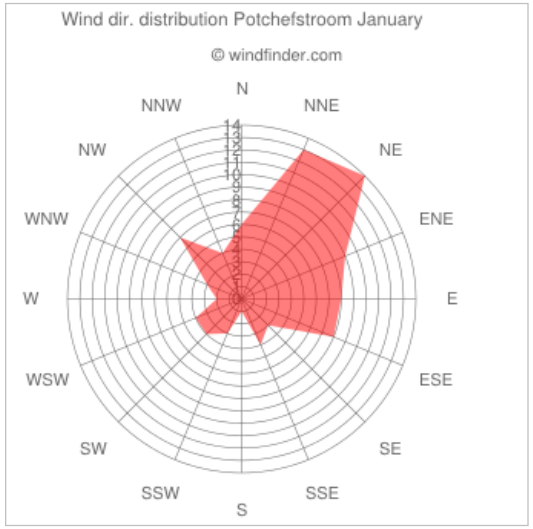


Figure 23: Wind Rose – January

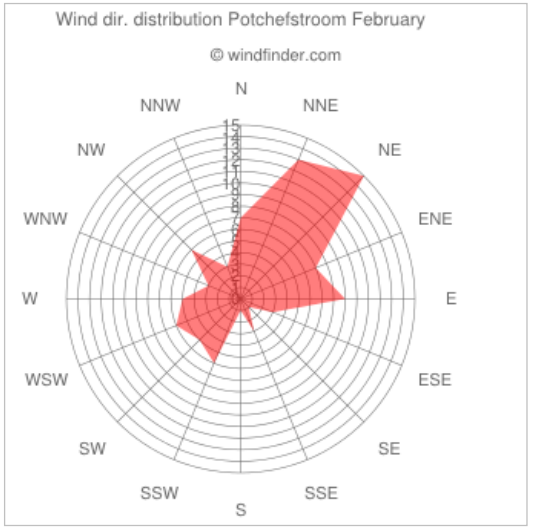


Figure 24: Wind Rose – February

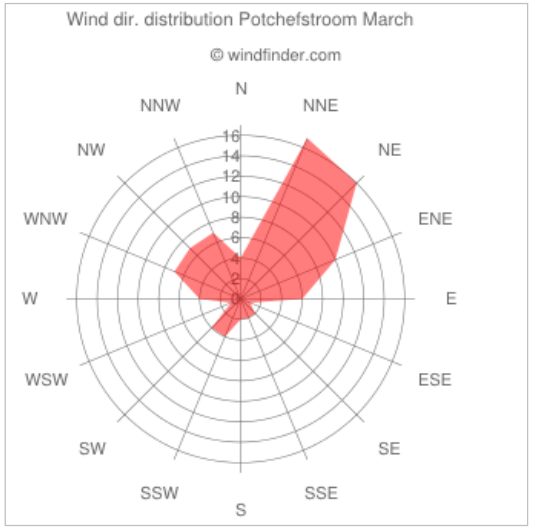


Figure 25: Wind Rose – March

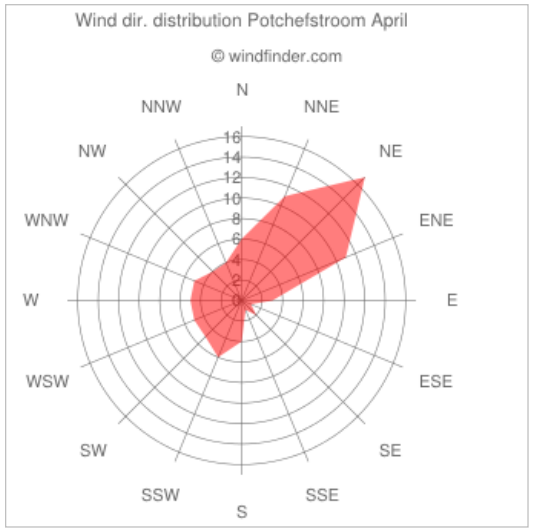


Figure 26: Wind Rose – April

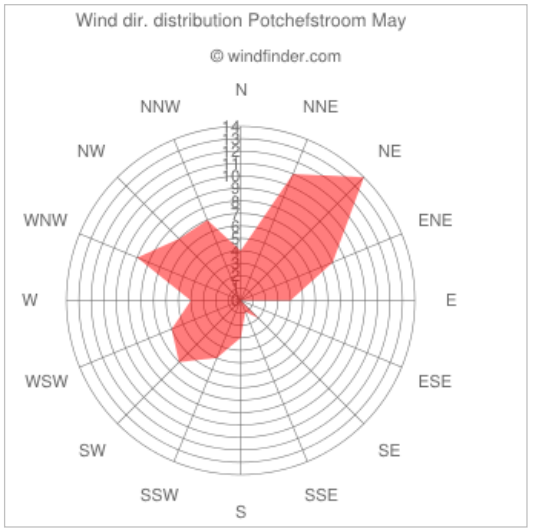


Figure 27: Wind Rose – May

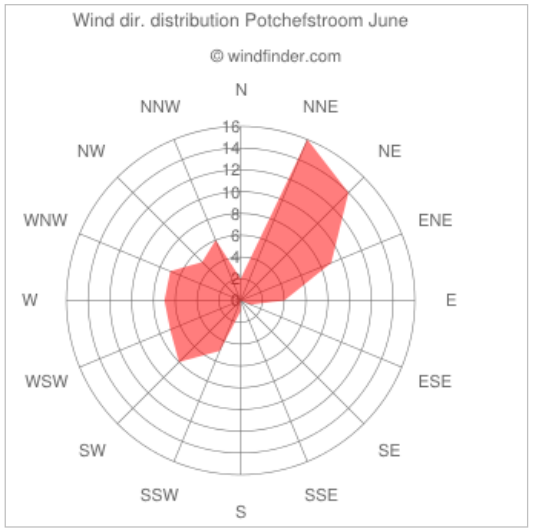


Figure 28: Wind Rose – June

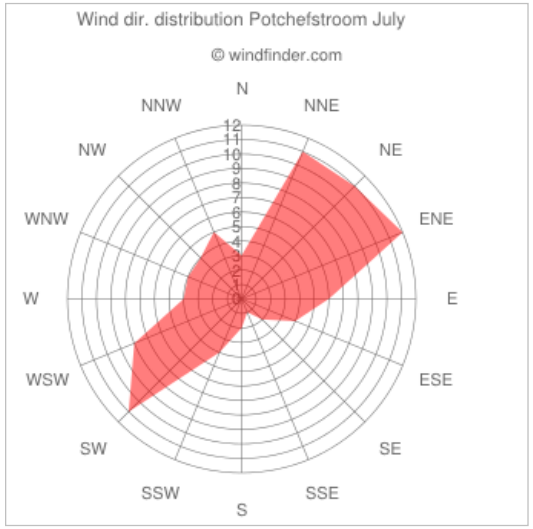


Figure 29: Wind Rose – July

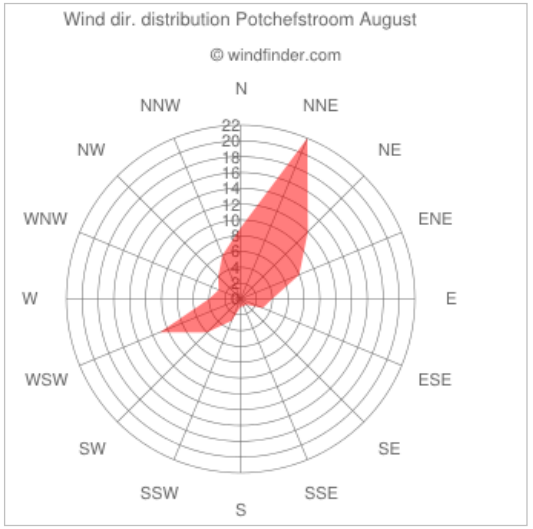


Figure 30: Wind Rose – August

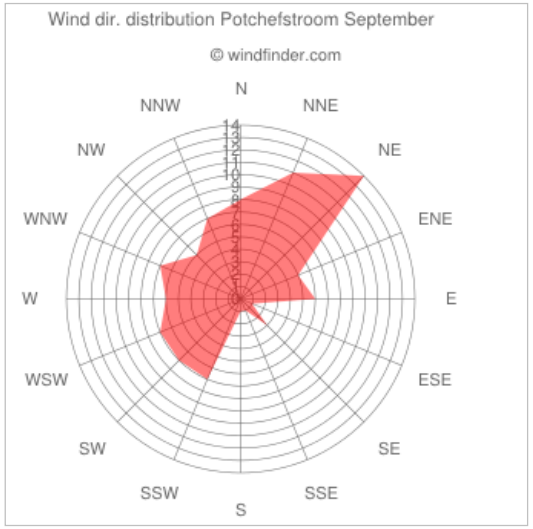


Figure 31: Wind Rose – September

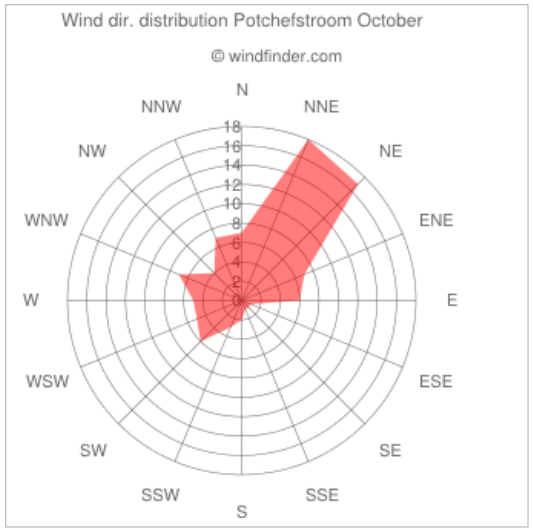


Figure 32: Wind Rose – October

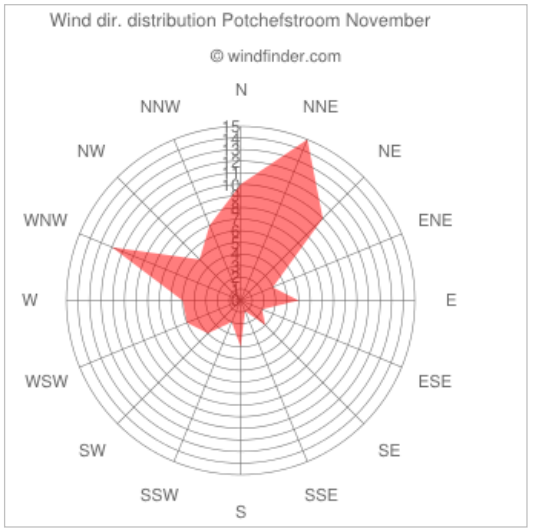


Figure 33: Wind Rose – November

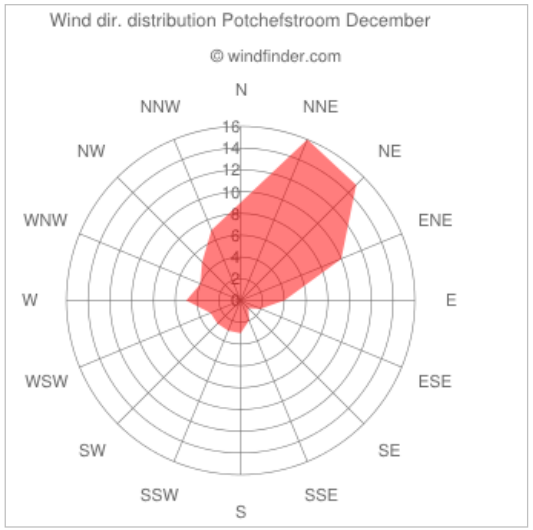


Figure 34: Wind Rose – December

2.3 Topography

The Rand Highveld grasslands are generally found in highly variable landscapes with ridges that are slightly elevated above surrounding undulating, sloping plains (Mucina & Rutherford, 2006). As can be seen in the figure below, the ground slopes downwards from the eastern to western part of the property. The elevation is between 1 398 metres above sea level on the eastern boundary of the site and 1 348 metres above sea level on the western boundary of the site. The rendering facility itself is situated at an elevation of 1 387metres above sea level. The slope of the site is up to 5% (AGIS, 2007).

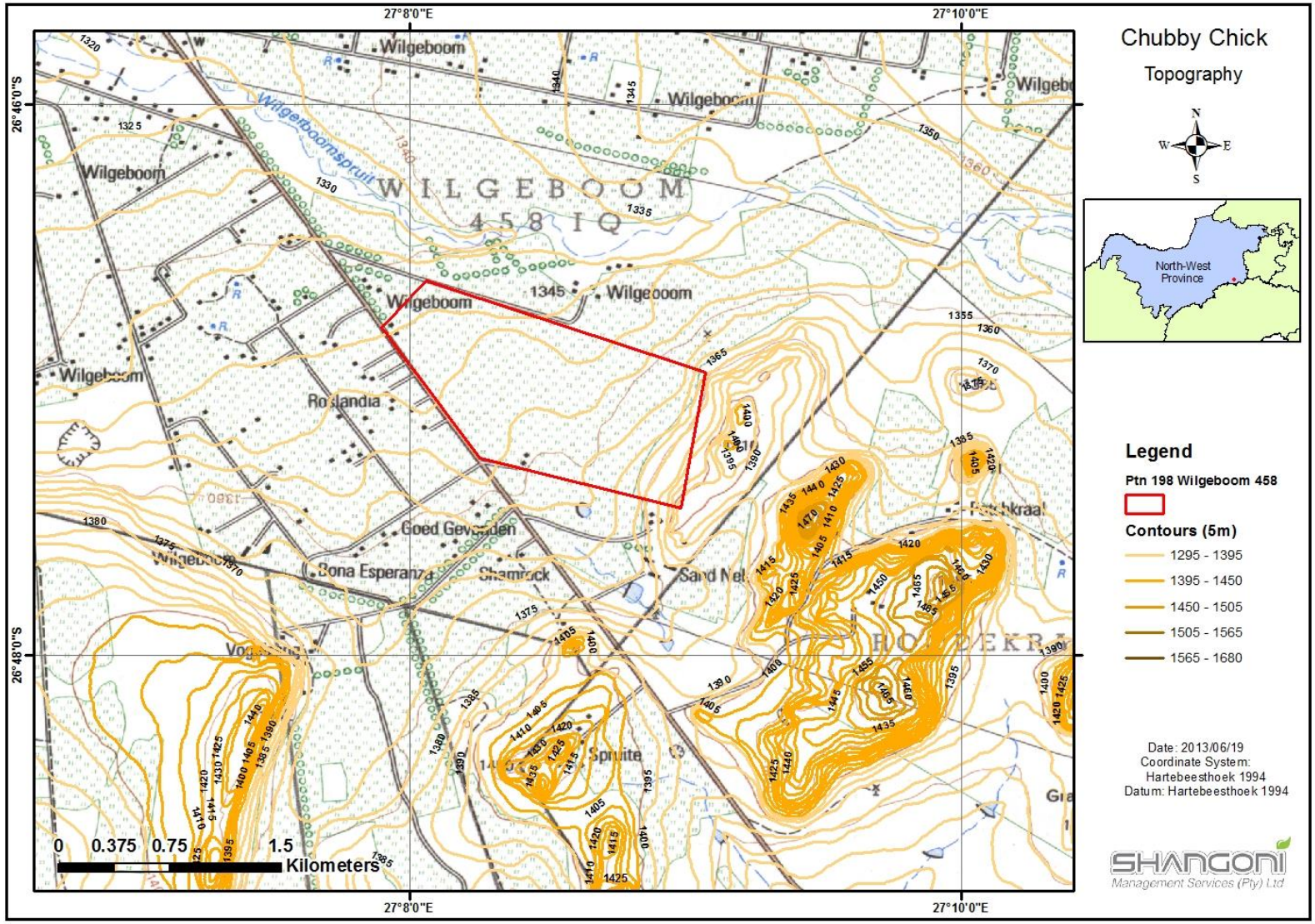


Figure 35: Topography of the site

2.4 Soils

The soil type of the site is S17, as shown in the figure below. This soil type is an association of soil classes 1 to 4 and consists of undifferentiated, structureless soils. These soils have favourable physical properties, but may have restricted soil depths, high erodibility, low base status, and/or excessive or imperfect drainage. The soil depth is generally between 450 and 750mm, the clay content is between 15 and 35% and the soils are euthrophic (high in nutrients) (AGIS, 2007).

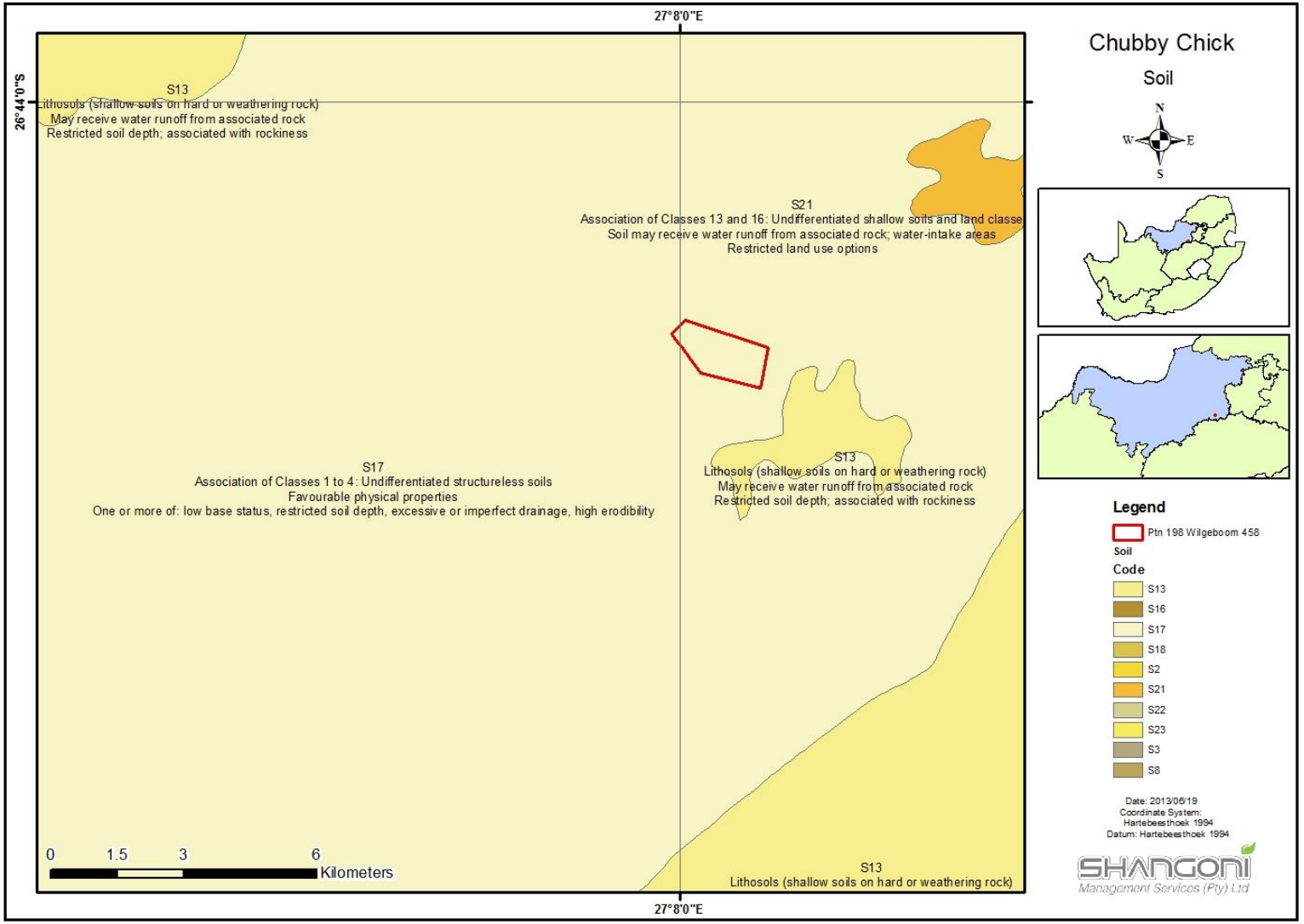


Figure 36: Soil type of the site

2.5 Land use and land capability

The property is zoned as Agriculture (72) Business land and the Chubby Chick rendering facility is situated on the property, together with a number of crop fields. As a result of the previously mentioned land uses, few natural areas remain on the property.

According to the AGIS Comprehensive Atlas (2007) the land capability of the property is “moderate potential agricultural land”. The dominant land use surrounding the property is cultivated land, with farm houses, a restaurant, go-cart route and tourist accommodation also present.

2.6 Vegetation

2.6.1 Vegetation type

Due to the disturbed nature of the vegetation onsite, a desktop assessment was undertaken to describe the nature of any natural vegetation surrounding the site.

The property lies within the Grassland biome region. The Grassland Biome is found mainly on the high central plateau of South Africa and the inland regions of KwaZulu-Natal and the Eastern Cape. Frost, fire and grazing maintain the dominance of grasses and prevent the establishment of trees. Fire is a natural factor caused by lightning and regular burning is essential for maintaining the structure and biodiversity of this biome. Grasslands are unique ecosystems with rich and often highly specialised animal life, both above and belowground. Formerly, native grasslands supported vast herds of ungulates such as blesbok, black wildebeest and springbok. Bird densities range from 50 to 380 birds per 100 ha, and include a wide range of species.

South African grasslands essentially comprise of a simple, single-layered herbaceous community of tussocked (or bunch) grasses. It is not generally known that the majority of plant species in grasslands are non-grassy herbs, most of which are perennial plants with large underground storage structures that can live for several decades. The Grassland Biome has an extremely high biodiversity, second only to the Fynbos Biome. At a 1 000 square metre scale, the average species richness of the Grassland Biome is even higher than those of most Fynbos communities, being surpassed only by Renosterveld.

As shown in the figure below, the specific grassland type is “Rand Highveld Grasslands”. These grasslands occur in the Gauteng, North-West, Free State and Mpumalanga Provinces at an altitude of 1 300 to 1 635 metres above mean sea level, but can occur as high as 1 760 metres above mean sea level.

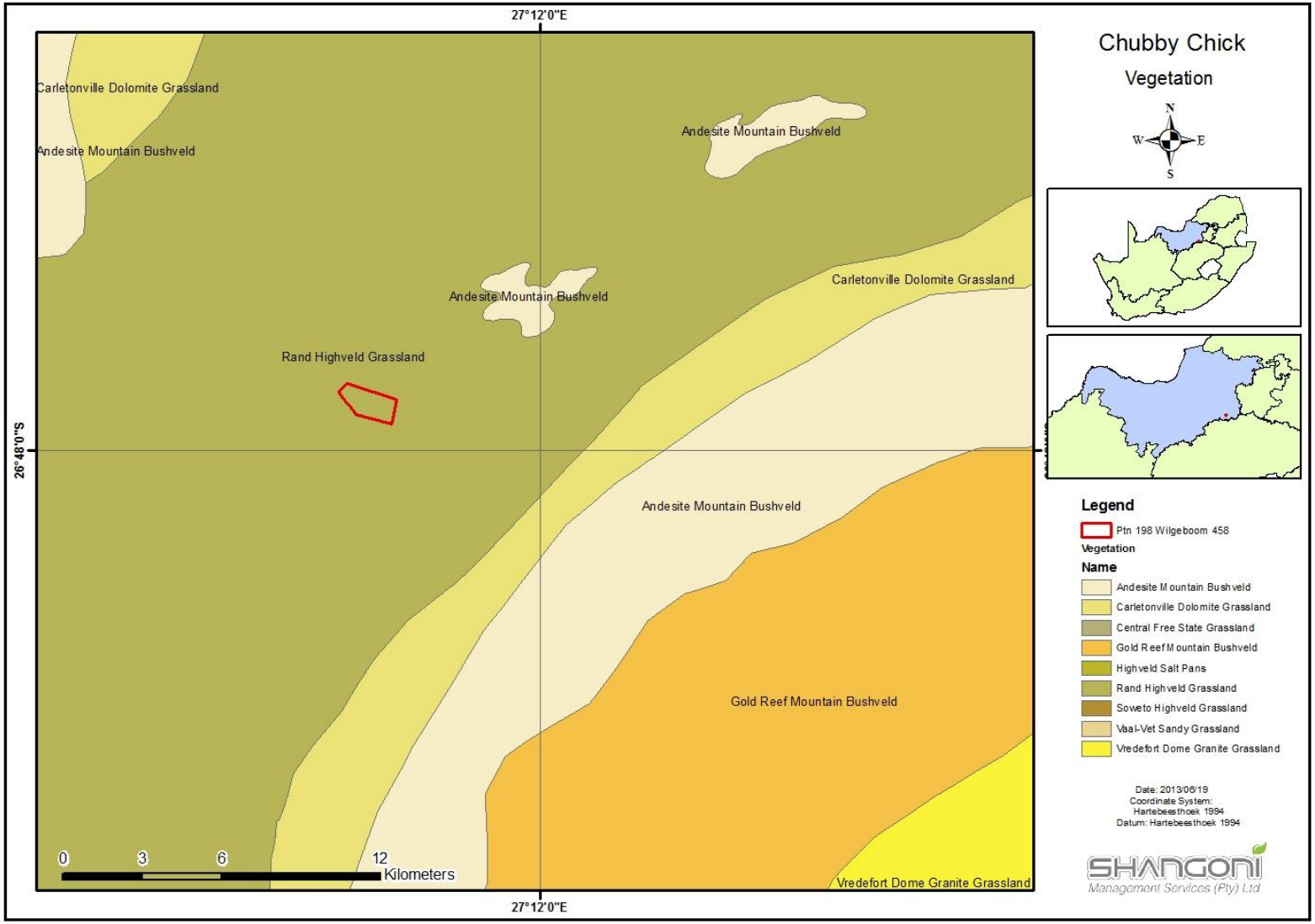


Figure 37: Vegetation type at the site

2.6.2 Dominant species

Within the Rand Highveld grasslands, the species-rich, sour, wiry grasslands alternate with low, sour shrubland on steeper slopes and rocky outcrops. On the plains, the genera *Themeda, Eragrotis, Heteropogon and Elionurus* are most common. A typical feature is the high diversity of herbs, many of which belong to the Asteraceae. Rocky ridges and hills have sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *P. welwitschii, Acacia caffra* and *Celtis africana*, together with a rich suite of shrubs, among which the genus *Rhus* (especially *Rhus magalismonata*) is prominent.

Important, biologically important and endemic taxa within the Rand Highveld grasslands are given in Appendix D. The natural grasslands are considered endangered with only 1% conserved in statutory and private conservation areas. The target for conservation is 24% (Mucina & Rutherford, 2006).

2.6.3 Endangered or rare species

The following table shows the IUCN (International Union for Conservation of Nature and Nature Resources) Red List of Threatened plant species found in the North West Province. Importantly, these species are not necessarily present at the specific project site. The following abbreviations are used: EN: Endangered; VU: Vulnerable; NT: Near Threatened; and LC: least concern.

Table 8: IUCN Red List of threatened plant species (IUCN, 2013)

Scientific name	Common name	Red List Status
Agrostis lachnantha	-	LC
Aloe peglerae	-	EN
Aloe zebrina	-	LC
Aponogeton desertorum	-	LC
Asparagus aethiopicus	-	LC
Bergia polyantha	-	LC
Bolboschoenus glaucus	Tuberous Bulrush	LC
Bulbine favosa	-	LC
Cladium mariscus	Great Fen-Sedge, Saw Grass, Fen Sedge	LC
Commelina benghalensis	Day Flower	LC
Cyperus difformis	Smallflower Umbrella Sedge	LC
Cyperus glaucophyllus	-	LC
Cyperus rotundus	Nut-grass	LC
Cyperus turrillii	-	LC
Epilobium hirsutum	Great Willowherb	LC
Erythrophysa transvaalensis	-	LC
Frithia pulchra	-	VU
Heteranthera callifolia	Mud plantain	LC
Indigofera daleoides	-	LC
Indigofera hofmanniana	-	LC
Indigofera melanadenia	-	LC
Juncus bufonius	Toad Rush	LC
Juncus effusus	Soft Rush	LC
Juncus inflexus	Hard Rush	LC
Ludwigia octovalvis	-	LC
Ludwigia palustris	Hampshire-Purslane	LC
Mimulus gracilis	-	LC
Myriophyllum spicatum	Spiked Water-milfoil, Eurasian Water Milfoil	LC
Najas graminea	Ricefield Waternymph	LC
Nuxia glomerulata	-	LR/NT
Osteospermum muricatum	-	LC
Paspalum scrobiculatum	Kodo Millet	LC
Persicaria salicifolia	-	LC
Persicaria senegalensis	-	LC
Potamogeton crispus	Curled Pondweed	LC
Potamogeton nodosus	Loddon Pondweed	LC
Potamogeton octandrus	-	LC

Scientific name	Common name	Red List Status
Agrostis lachnantha	-	LC
Aloe peglerae	-	EN
Aloe zebrina	-	LC
Aponogeton desertorum	-	LC
Asparagus aethiopicus	-	LC
Bergia polyantha	-	LC
Bolboschoenus glaucus	Tuberous Bulrush	LC
Bulbine favosa	-	LC
Cladium mariscus	Great Fen-Sedge, Saw Grass, Fen Sedge	LC
Commelina benghalensis	Day Flower	LC
Cyperus difformis	Smallflower Umbrella Sedge	LC
Cyperus glaucophyllus	-	LC
Cyperus rotundus	Nut-grass	LC
Cyperus turrillii	-	LC
Epilobium hirsutum	Great Willowherb	LC
Erythrophysa transvaalensis	-	LC
Frithia pulchra	-	VU
Heteranthera callifolia	Mud plantain	LC
Potamogeton trichoides	Hairlike Pondweed	LC
Ranunculus multifidus	-	LC
Samolus valerandi	Brookweed	LC
Sebaea pentandra	-	LC
Sporobolus discosporus	-	LC

2.7 Animal life

2.7.1 Commonly occurring species

For a full list of commonly occurring species in the North West Province or specifically in the vicinity of the project site please refer to Appendix D.

2.7.2 Endangered species

The following table shows the IUCN Red List of Threatened animal species that are found in the North West Province. Importantly, these species are not necessarily present at the specific project site. The following abbreviations are used: EN: Endangered; VU: Vulnerable; NT: Near Threatened; and LC: least concern.

Table 9: IUCN Red List of threatened animal species (IUCN, 2013)

Scientific name	Common name	Red List Status
Mammals		
Graphiurus ocularis	Spectacled Dormouse, Namtap	LC
Pronolagus rupestris	Smith's Red Rock Hare, Smith's Red Rockhare	LC
Mystromys albicaudatus	White-tailed Mouse, White-tailed Rat	EN
Insects		
Nesciothemis farinosa	Black-tailed Skimmer, Black-tailed Dancer, Black-tailed False-skimmer, Common Blacktail	LC
Pseudagrion kersteni	Kersten's Sprite, Powder-striped Sprite	LC
Anax ephippiger	Vagrant Emperor	LC
Anax imperator	Blue Emperor, Emperor Dragonfly	LC
Anax speratus	Orange Emperor	LC
Cacyreus virilis	Alternative Bush Blue, Mocker Blue, Eastern Bush Blue, Mocker Bronze	LC
Capys alphaeus	Orange-banded Protea Butterfly, Protea Scarlet	LC
Crocothemis sanguinolenta	Little Scarlet, Slim Scarlet-darter, Small Scarlet	LC
Diplacodes lefebvrii	Black Percher	LC
Frankenbergerius forcipatus	-	DD
Ischnura senegalensis	Common Bluetail, Marsh Bluetail	LC
Orthetrum chrysostigma	Epaulet Skimmer	LC
Orthetrum julia	Julia Skimmer	LC
Orthetrum trinacria	Long Skimmer	LC
Palpopleura deceptor	Deceptive Widow	LC
Pantala flavescens	Globe Skimmer, Wandering Glider, Globe Wanderer	LC
Paternympha narycia	Spotted-eye Brown, Small Hillside Brown	LC

Scientific name	Common name	Red List Status
Potamonautes calcaratus	-	LC
Rhyothemis semihyalina	Phantom Flutterer	LC
Sympetrum fonscolombii	Red-veined Darter	LC
Tramea basilaris	Keyhole Glider, Red Marsh Trotter, Wheeling Glider	LC
Trithemis annulata	Violet Dropwing, Violet-marked Darter	LC
Trithemis arteriosa	Red-veined Dropwing	LC
Trithemis furva	Navy Dropwing, Dark Dropwing	LC
Trithemis kirbyi	Orange-winged Dropwing, Rock Dropwing, Kirby's Dropwing	LC
Tuxentius calice	White Pierrot, White Pie	LC
Reptiles		
Acontias percivali	Percival's Legless Skink	LC
Chamaeleo dilepis	Common African Flap-necked Chameleon, Flap-necked Chameleon	LC
Psammophis subtaeniatus	Stripe-bellied Sand Snake	LC
Lygodactylus nigropunctatus	Black-spotted Dwarf Gecko	LC
Millipedes		
Doratogonus levigatus	-	LC
Doratogonus rugifrons	-	LC
Snails and slugs (Gastropoda)		
Biomphalaria pfeifferi	-	LC
Galba truncatula	-	LC
Fish		
Barbus brevipinnis	Shortfin Barb	NT
Barbus motebensis	Marico Barb	VU
Barbus rapax	Southern Papermouth	LC

Scientific name	Common name	Red List Status
Barbus sp. nov. 'Waterberg'	Waterberg Shortfin Barb	NT
Barbus trimaculatus	Threespot barb, Threespot barb (FB)	LC
Chetia flaviventris	Canary Kurper	LC
Chiloglanis pretoriae	Shortspine Catlet, Shortspine Suckermouth	LC
Labeo rosae	Rednose Labeo	LC
Labeo umbratus	Moggel	LC
Labeobarbus aeneus	Vaal-orange Smallmouth Yellowfish	LC
Labeobarbus kimberleyensis	Largemouth Yellowfish, Vaal-orange Largemouth Yellowfish	NT
Lestes pallidus	Pale Spreadwing, Pallid Spreadwing	LC
Alopias vulpinus	Common Thresher Shark	VU
Dasyatis chrysonota	Blue Stingray	LC
Deania profundorum	Arrowhead Dogfish	LC
Deania quadrispinosa	Longsnout Dogfish	NT
Isurus oxyrinchus	Shortfin Mako	VU
Labeo capensis	Orange River Mudfish	LC
Crustacea (Malacostraca)		
Potamonautes sidneyi	Natal River Crab, Sidney's River Crab	LC
Potamonautes unispinus	Single-spined River Crab	LC

2.8 Surface water

2.8.1 Catchment areas

The site is situated within the C23L quaternary catchment, of the Upper Vaal Water Management Area and the Central Highveld Groundwater Region.

Table 10: Catchment information (GRDM) (Shangoni AquiScience, 2014)

Catchment attribute	
Water Management Area	Upper Vaal
Quaternary catchment	C23L
Quaternary catchment area (km^2)	1211
Mean annual rainfall (GRDM)	612 mm/a
Mean annual runoff	36 mm/a
Baseflow	4 mm/a
Population (2000)	1350 Count
Mean annual evaporation	1600 - 1700 mm/a
Total groundwater use	0.73 Mm^3/a
Ecoregion	Highveld
Present Eco Status Category	C Category
Recharge	38.37 mm/a
Exploitation potential	≈12 Mm^3/a
Vegetation type	Rocky Highveld Grassland
Soil	Sand-Clay-Loam (SaClLm)
Groundwater General Authorization	75 $m^3/ha/a$
Geology	Post Transvaal Diabase
Permanent Rivers	Vaal River & Mooi River
Ephemeral rivers	Wilgeboomspruit & Rooikraalspruit

The catchment's major water drainage system is the west flowing Vaal River, situated approximately 16 km south of the rendering facility. The Mooi River, a permanently flowing river, is a major tributary of the Vaal River and flows approximately 7km to the west of the rendering facility. The Mooi River has two ephemeral tributaries, the Wilgerboomspruit and the Rooikraalspruit. These streams can be found 1.6km to the north and 5km to the south of the rendering facility, respectively.

The major surface water flow direction in the immediate vicinity of the facility is west-northwest. The reason for this is the undulating topography, ranging from 1 320 mamsl north of the facility towards the Wilgerboomspruit and 1 485 mamsl south-east of the facility (Shangoni AquiScience, 2014).

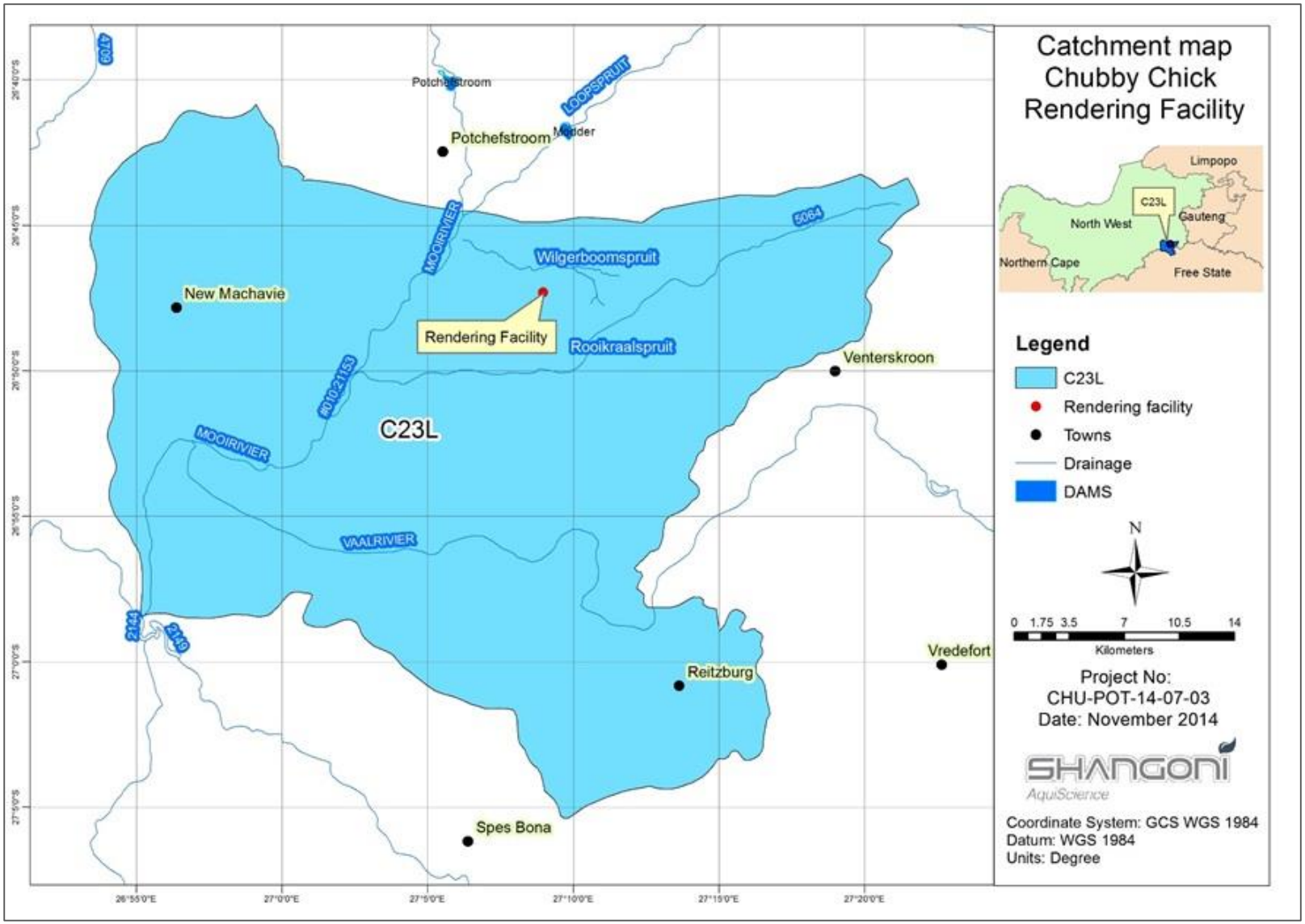


Figure 38: Quaternary catchment of the site (Shangoni AquiScience, 2014)

2.8.2 Mean annual runoff (MAR)

The Vaal River Catchment covers an area of 192 000km^2 and the mean annual runoff for this area of the catchment is approximately 1 100 million m^3/annum (PDNA *et al*., 2004).

2.8.3 Surface water quantity and use

No surface water abstraction or use occurs on the property, nor will such use occur in future.

2.8.4 Water authority

The relevant Water Authority is the Upper Vaal regional office, situated in Pretoria.

2.9 Groundwater

2.9.1 Aquifer type

The rendering facility is situated in a d3, Intergranular and Fractured aquifer region with median borehole yields of 0.5-2 litres/second (Geohydrological Map Sheet 2526, 1999). The aquifers are classified as “minor” aquifers according to the Vegter aquifer classification map (DWA, 2012). Larger yields may be found near fault zones or dolerite intrusions (dykes). Although not verified, it is believed that groundwater flow will be in a similar direction as the surface water flow, being from east to west in the immediate vicinity of the facility (Shangoni AquiScience, 2014).

2.9.2 Depth of water tables

The depth to water level is 12.9 metres below ground level and the groundwater recharge is 14mm/annum. Groundwater in the area is mostly used for livestock use, followed by industry use and lastly rural use (DWA, 2010).

2.9.3 Boreholes and springs

Approximately 55m^3 of groundwater is abstracted per day for processing and domestic use at the rendering facility. The groundwater is abstracted from a borehole on an adjacent property (Portion 0 of the farm Vogelzang 467 IQ), owned by Chubby Chick/Cycle City.

The aquifer for the Farm Vogelsang is mostly of igneous/felsic type. Two major fault zones can be found immediately west and east of the borehole and also towards the south-east of the production borehole (Shangoni AquiScience, 2014).

2.9.4 Groundwater quality

Groundwater, from the production borehole, was evaluated against the SANS 241: 2011 drinking water guidelines. The water quality assessment found ammonia (NH_4) to be the only chemical constituent to

exceed the SANS drinking water standards. All other chemical constituents recorded within the SANS drinking water standards (Refer to Table 11 for the water quality results).

The SANS drinking water standard used for ammonia is primarily based on aesthetic effects. Ammonia is not toxic to humans at concentrations usually found in drinking water. High levels of ammonia in drinking water can, however, be associated with indirect health effects, such as compromising the disinfection of water and giving rise to nitrite (NO_2) formation in distribution systems, which may result in taste and odour problems and may also be potentially toxic to infants.

The source of the high ammonia in the groundwater is unknown, but could be related to anaerobic decomposition of organic waste and/or runoff from agricultural lands, where ammonia salts may have been used for fertilizers.

Table 11: Hydrochemical and bacteriological results for the Chubby Chick Rendering Facility production borehole (Shangoni AquiScience, 2014)

Locality / Guideline Parameter	Unit	Domestic use SANS 241 (2011)	CCBH01
pH	-	5 - 9.7	7.51
Electrical conductivity (EC)	mS/m	≤170[a]	30.5
Total dissolved solids (TDS)	mg/l	1 200[a]	220
Calcium (Ca)	mg/l	-	27.2
Magnesium (Mg)	mg/l	-	15.4
Sodium (Na)	mg/l	200[a]	22.3
Potassium (K)	mg/l	-	1.54
Total alkalinity (M-ALK)	mg/l	-	145
Chloride (Cl)	mg/l	300[a]	11.3
Sulphate (SO_4)	mg/l	500	20.7
Aluminium (Al)	mg/l	0.3[b]	<0.003
Iron (Fe)	mg/l	2.0	<0.003
Manganese (Mn)	mg/l	0.5	<0.001
Nitrate-nitrogen (NO_3-N)	mg N/l	11	5.96
Total ammonia-nitrogen (NH_3-N + NH_4-N)	mg N/l	1.5a	5.29
Orthophosphate (PO_4-P)	mg P/l	-	0.201
Fluoride (F)	mg/l	1.5	0.272
Tot Hardness	mg/l	-	131
Sodium adsorption ratio (SAR)	ratio	-	0.8
Chemical oxygen demand (COD)	mg/l	-	<0.082
Total coliforms	cfu/100 ml	0	<1
E.coli	cfu/100 ml	0	<1
DWA classification			Class 2

[a] Aesthetic guideline value

[b] Operational guideline value

The Stiff and expanded Durov diagrams below indicate relatively fresh, recently recharged groundwater with the cations Ca/Mg and the anion HCO_3 dominating (Shangoni AquiScience, 2014).

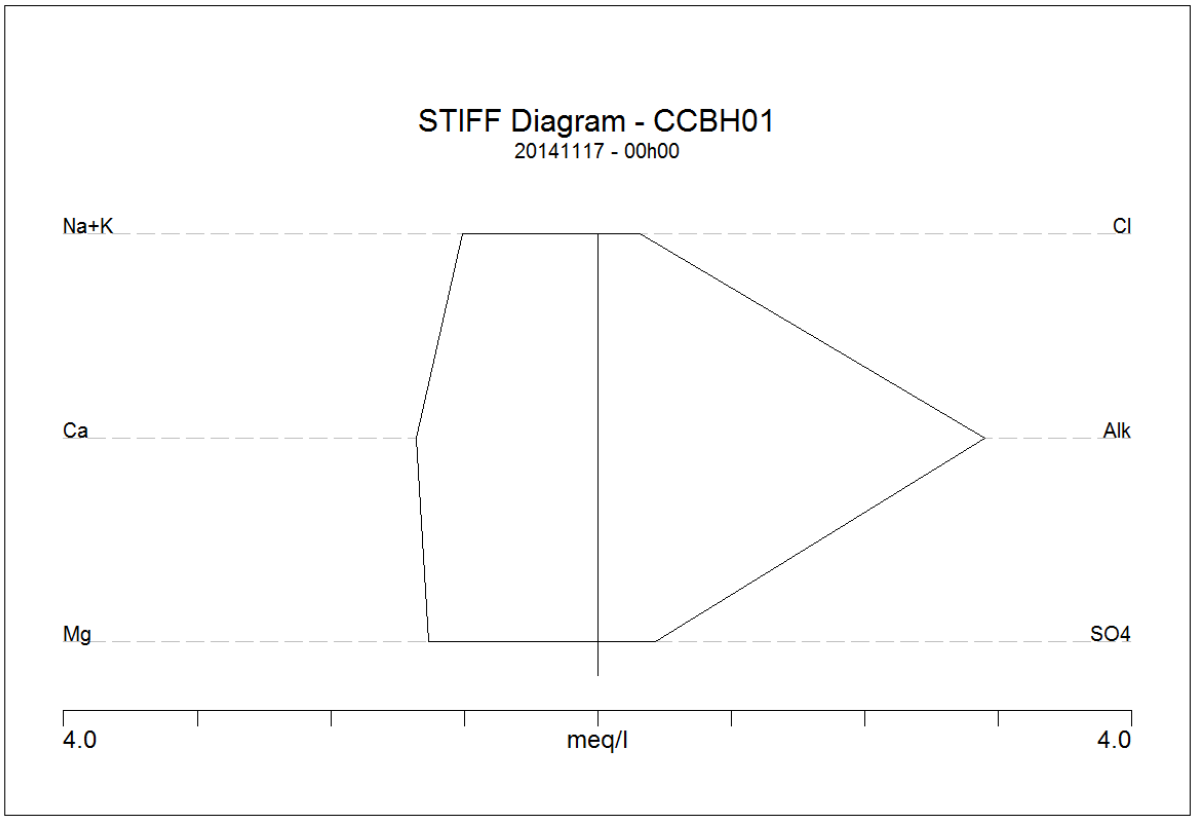


Figure 39: Stiff diagram for the rendering facility's abstraction borehole (Shangoni AquiScience, 2014)

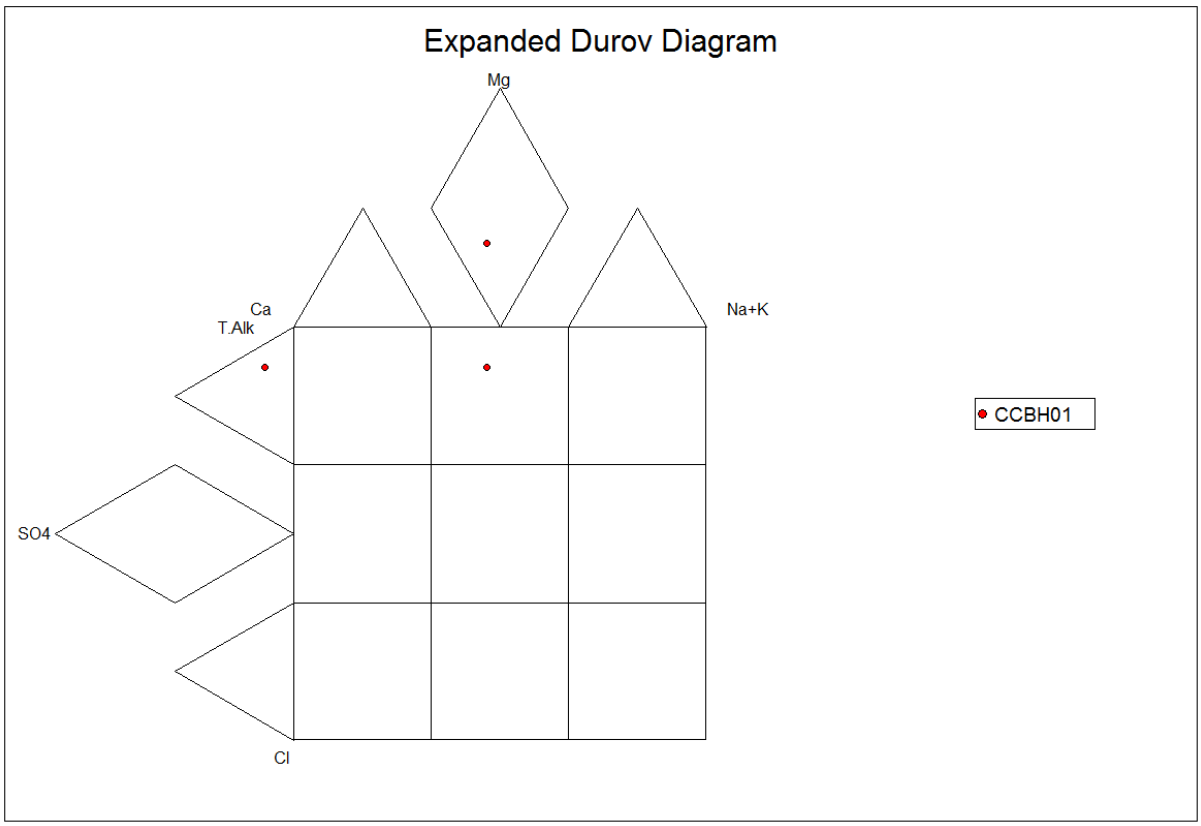


Figure 40: Expanded Durov diagram for the rendering facility's abstraction borehole (Shangoni AquiScience, 2014)

2.9.5 Storage of water

Groundwater abstracted on an adjacent property (Portion 0 of the farm Vogelzang 467 IQ), owned by Chubby Chick/Cycle City, and pumped to the rendering facility is stored at the facility in five (5) 5 000 litre JoJo tanks. The total amount of water stored at the rendering facility is therefore 25 000 litres at any one time.

2.9.6 Groundwater quantity

Currently, there are no major groundwater abstraction projects in the C23L quaternary catchment. Small abstractions are most probably utilised for livestock watering and domestic use. The exploitation potential for this catchment is therefore quite substantial, equalling to approximately 12Mm^3/a (Shangoni AquiScience, 2014).

2.10 Wastewater

Per day, approximately 55m^3 of wastewater is generated at the rendering facility. The wastewater currently flows into trenches/earthen canals and a sump and is then pumped to an earth evaporation dam to the north-east of the rendering facility. Overflow from the earth evaporation dam occurs towards a trench/earthen canal from where it either undergoes further evaporation or leaches into the ground.

A French drain has been constructed on site for the management of sewage, but is not yet operational. As a result, sewage is currently also discharged into the wastewater reticulation system.

A sample of the rendering facility process wastewater was sent for chemical, organic and bacteriological analysis and evaluated against the following:

- General Limit standard for wastewater discharge as per Section 21(f and h) of the National Water Act (NWA), 1998 (Act No. 36 of 1998) (refer to Table 12); and
- General Limit standard for wastewater discharge as per Section 21(e) of the National Water Act (NWA), 1998 (Act No. 36 of 1998) (refer to Table 13).

The levels of iron (Fe), total ammonia (NH_3 + NH_4), organic nitrogen, phosphate (PO_4), fluoride (F), *E.coli*, chemical oxygen demand (COD), suspended solids (SS) and soap-oil-grease (SOG) in the wastewater exceeded the General Limit standards for wastewater discharge as per Section 21(f and h) of the National Water Act (NWA), 1998 (Act No. 36 of 1998). The process wastewater is therefore not allowed to be discharged into the environment or allowed to overflow in its current state under the General Authorisations and should be kept within a dirty water circuit.

The levels of electrical conductivity (EC), faecal coliforms, COD and the sodium adsorption ratio (SAR) in the process wastewater were found to exceed the General Limit for wastewater irrigation as per Section 21(e) of the National Water Act (NWA), 1998 (Act No. 36 of 1998). The wastewater may therefore not be utilised for any type of irrigation purposes in its current form under the General Authorisations.

The wastewater quality is indicative of very high organic loads subjected to organic breakdown, mixed with sewage.

A new wastewater treatment system is being proposed to effectively treat the wastewater to the Department of Water Affairs' general limit standards for irrigation and/or discharge into a water resource. A separate system (French drain) has been installed for the handling of the sewage and grey water from the shower facilities. A Waste Management License application is being conducted for all waste related activities occurring onsite (Shangoni AquiScience, 2014).

Table 12: Effluent quality evaluated according to the General Limit for discharge into a water resource (Shangoni AquiScience, 2014)

Locality / Guideline Parameter	Unit	General Limit	CCeffl.
pH	-	5 - 9.7	8.55
Electrical conductivity (EC)	mS/m	≤150	966
Total dissolved solids	mg/l	-	6895
Calcium (Ca)	mg/l	-	3.63
Magnesium (Mg)	mg/l	-	3.64
Sodium (Na)	mg/l	-	82.4
Potassium (K)	mg/l	-	65.7
Total alkalinity (M-ALK)	mg/l	-	5742
Chloride (Cl)	mg/l	-	271
Sulphate (SO_4)	mg/l	-	593
Aluminium (Al) [1]	mg/l	-	0.035
Iron (Fe) [1]	mg/l	0.3	1.24
Manganese (Mn) [1]	mg/l	0.1	-0.001
Arsenic (As)[1]	mg/l	0.02	<0.007
Cadmium (Cd) [1]	mg/l	0.005	<0.001
Chromium VI (Cr^{6+})[1]	mg/l	0.05	<0.001
Copper (Cu) [1]	mg/l	0.01	<0.001
Cyanide (CN^-)[1]	mg/l	0.02	<0.01
Lead (Pb) [1]	mg/l	0.01	<0.001
Manganese (Mn)[1]	mg/l	0.1	<0.001
Mercury (Hg) [1]	mg/l	0.005	<0.007
Selenium (Se) [1]	mg/l	0.02	<0.007
Zinc (Zn) [1]	mg/l	0.1	0.098
Boron (B) [1]	mg/l	1	0.42
Nitrate + Nitrite (NO_3 + NO_2)	mg N/l	15	5.34
Total ammonia (NH_3 + NH_4)	mg N/l	6	1793
Kjeldahl N	mg N/l	-	1550
Total nitrogen	mg N/l	-	1798
Orthophosphate (PO_4-P)	mg P/l	10	41.2
F	mg/l	1	13.5
Tot Hardness	mg/l	-	24
SAR	ratio	-	7.3
Total coliforms	cfu/100 ml	-	>100 000
E.coli	cfu/100 ml	0	>100 000
Chemical Oxygen Demand (COD)	mg/l	75	21418
Suspended solids (SS)	mg/l	25	1750
Soap-oil-grease (SOG)	mg/l	2.5	99.5
DWA classification			**Unacceptable Class 4**

[1] Dissolved species

Values highlighted in red indicate parameters of concern

Table 13: General wastewater limits per volume irrigation water (Shangoni AquiScience, 2014)

Parameter	Unit	2000 m^3/d	500 m^3/d	50 m^3/d	CCeffl.
pH		5.5-9.5	6.0-9.0	6.0-9.0	8.55
EC	mS/m	150	200	200	966
F	mg/l	1	-	-	13.5
NO_3+NO_2 (N)	mg/l	15	-	-	5.34
NH_4-N	mg/l	3	-	-	1793
SOG	mg/l	2.5	-	-	99.5
F. coliforms	cfu/100 ml	1000	100 000	100 000	>100 000
SS	mg/l	25	-	-	1750
COD	mg/l	75	400	5000	21418
SAR	mg/l	-	5	5	7.3

2.11 Water Use Licensing

An integrated water use license application will be submitted to the Department of Water and Sanitation for the following water use license activities:

- Section 21(b): Storage of clean water: Storage of abstracted groundwater in the JoJo tanks;
- Section 21(c): Impeding or diverting the flow of water in a watercourse: The entire rendering facility operation is located within 500 metres of a drainage line and possible wetland;
- Section 21(e): Engaging in a controlled activity, identified as such in Section 37(1): Irrigation of any land with waste or water containing waste generated through any industrial activity or by a waterwork: The irrigation of crops using treated wastewater;
- Section 21(f): Discharge of waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit: Discharge of treated wastewater into the environment;
- Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource: Treatment of wastewater in the proposed wastewater treatment plant; and
- Section 21(i): Altering the bed, banks, course or characteristics of a watercourse: The entire rendering facility operation is located within 500 metres of a drainage line and possible wetland.

Water uses not requiring licensing – Abstraction of Groundwater

According to the GN 399 General Authorisations, dated 26 March 2004, in terms of Section 39 of the NWA, 1998 (Act No. 36 of 1998), a person who takes more than 50 cubic meters of water from a surface water resource or 10 cubic meters of water from a groundwater resource on any given day must register the water use with the responsible authority. As ±55m^3 of groundwater is abstracted per day for use at the rendering facility, a Water Use Registration is required.

According to the GN 399 General Authorisations, dated 26 March 2004, a person who owns or lawfully occupies property registered at the Deeds Office at the date of the notice may on that property or land take groundwater as set out in Table 1.2, outside the areas set out in paragraph 1.2.

According to Table 1.2 of GN 399 General Authorisations, dated 26 March 2004, 75m^3 of water per hectare per year may be taken from quaternary catchment C23L. The property from which groundwater is abstracted (Portion 0 of the farm Vogelzang 467 IQ) is 825.3ha in size. This means that under the General Authorisations, 61 897.5m^3 of groundwater may be abstracted on the property per annum. This equates to 169.58m^3 of groundwater that may be abstracted per day. As only ±55m^3 is abstracted per day for use at the rendering facility, a license in terms of Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998) is therefore not required.

2.12 Sensitive landscapes

The majority of the site (rendering facility) and property has been disturbed. Apart from the rendering facility, the property is used for crop production and is therefore in a disturbed state.

2.12.1 Wetlands

A Wetland Delineation and Functional Assessment of the project property was conducted by Limosella Consulting in February 2015. The following is an extract of the findings of their investigation.

All wetlands within a 500m radius from the rendering facility were delineated and assessed, as required by the National Water Act, 1998. Only one wetland, a hillside seep, was found and delineated 250m downslope (west and north-west) of the rendering facility. The wetland is shown in Figure 41 and is situated within the cultivated foot-slope (cultivated field of maize and sorghum) draining northwards into the Wilgeboomspruit. The rendering facility and its existing wastewater dams and drains do not directly encroach onto the wetland or its 50m buffer.

The combined PES (Present Ecological State) of the seep is a D↓ (largely modified), meaning that a large change in ecosystem processes and loss of natural habitat and biota has occurred. The modifications have been due to the following:

- The historical cultivation of croplands;
- Changes in the catchment hydrology and soil loss; and
- The addition of alien invasive plants into the system.

The EIS (Ecological Importance and Sensitivity) score of 1.3 indicates that the seep has a moderate ecological importance and sensitivity. Such wetlands are ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands are not usually sensitive to habitat and flow modifications (Limosella Consulting, 2015).

2.12.2 Critical Biodiversity Areas

According to the South African National Biodiversity Institute's Biodiversity GIS database, the property lies across two Critical Biodiversity Areas in terms of the North West Province's Critical Biodiversity Assessment. The rendering facility itself lies within Critical Biodiversity Area 2 (refer to Figure 42).

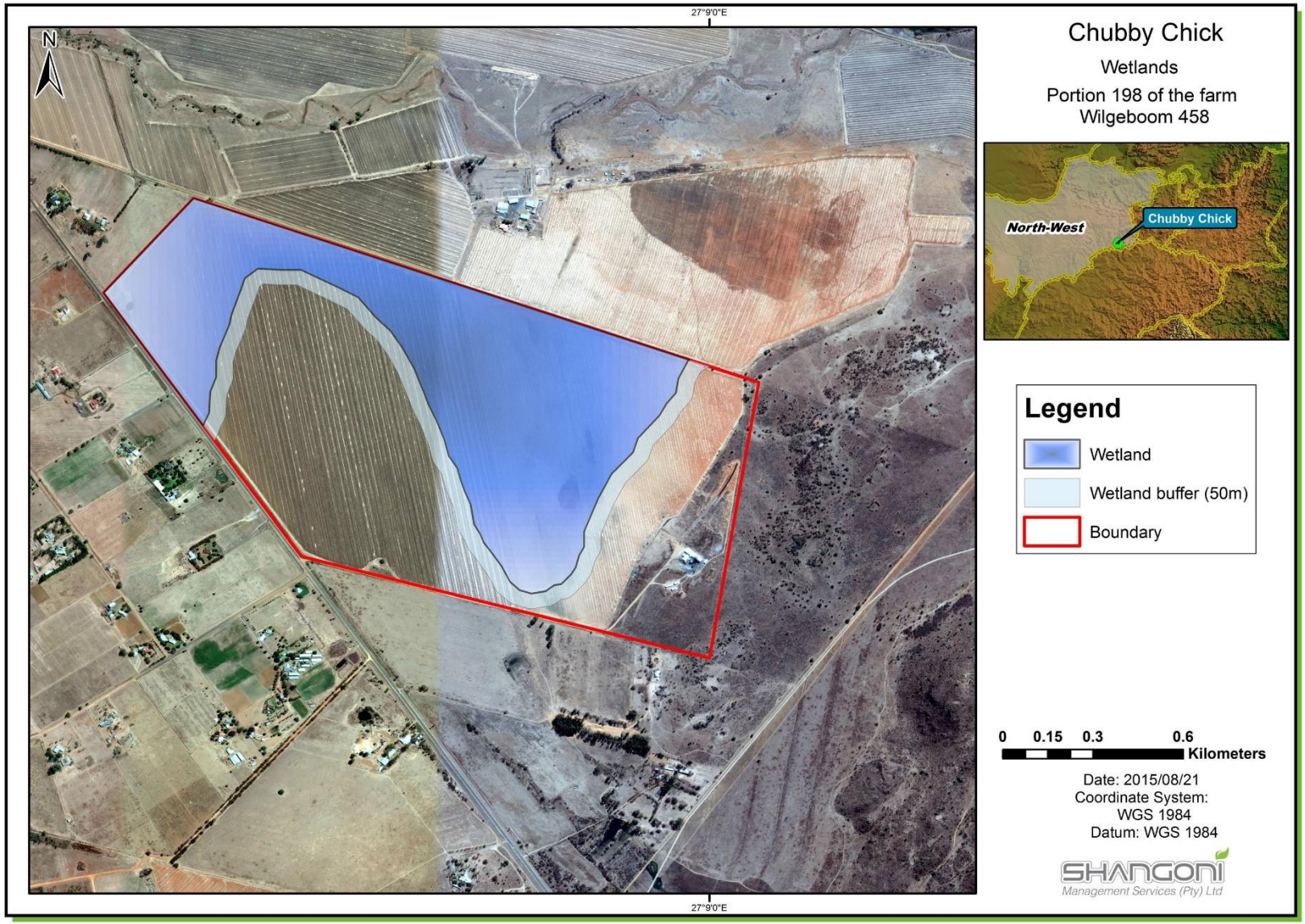


Figure 41: The wetland and wetland buffer in relation to the rendering facility.

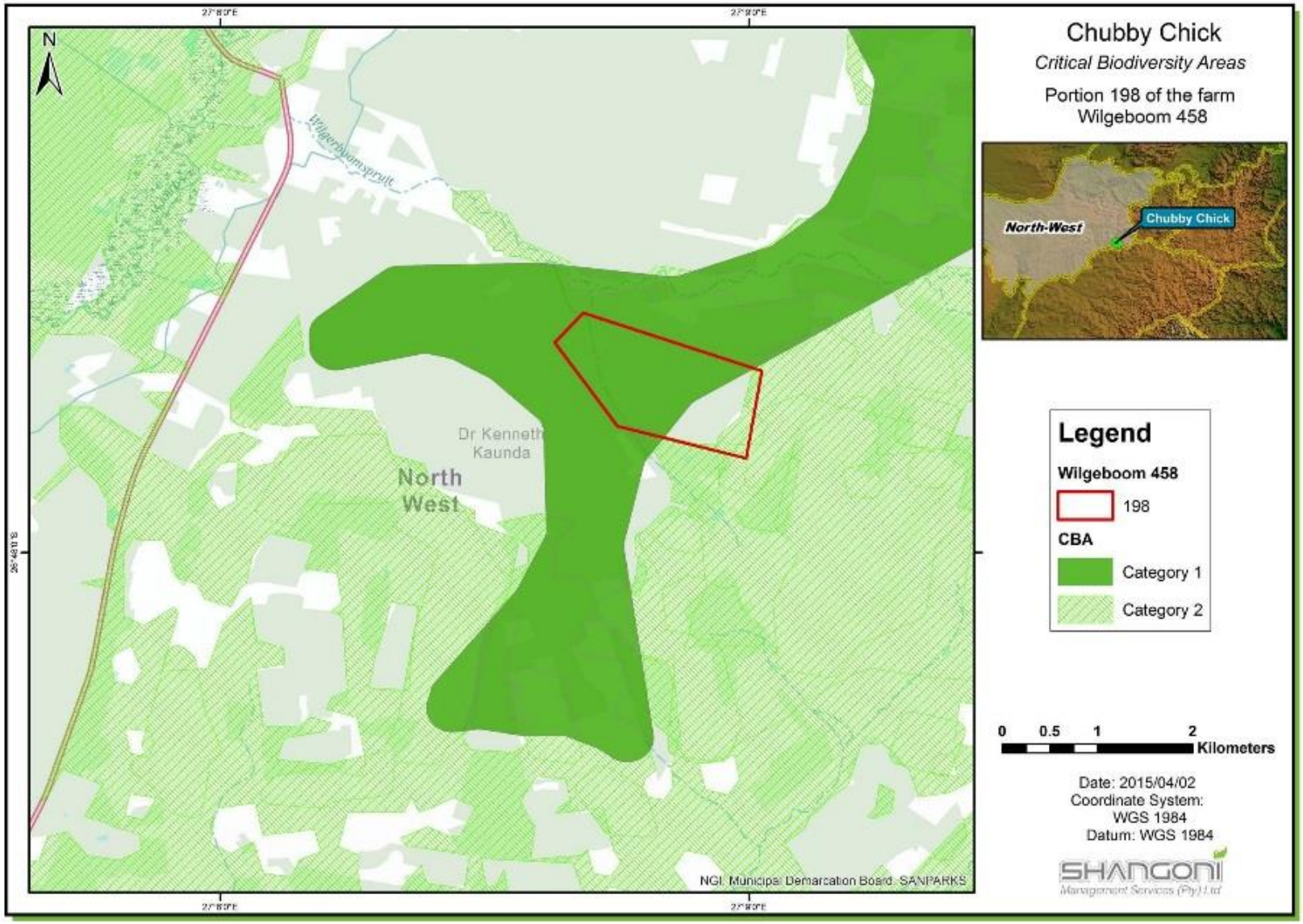


Figure 42: Critical Biodiversity Area Map (SANBI, 2007)

2.13 Sites of archaeological and cultural interest

The area where the rendering facility is situated is in an entirely disturbed state. Shangoni is awaiting comments from the South African Heritage Resources Agency (SAHRA) as to whether a Heritage Impact Assessment is required for the site.

2.14 Air Quality

2.14.1 Emissions and odours

The generation of odour emissions is generally the most significant air quality issue at a rendering facility (Sindt, 2006). Odours are mostly caused by volatile organic compounds (VOCs) and these are the main atmospheric emissions generated at rendering facilities. VOC emissions can be made up of all or some of the following compounds: ammonia, organic sulphides, particulates, hydrogen sulphide, trimethylamine, disulphides, quinoline, C-4 and C-7 aldehydes, C-4 amines, C-3 to C-6 organic acids, dimethyl pyrazine and other pyrazines. Small volumes of the following may also be emitted: ketones, aromatic compounds, C-4 to C-7 alcohols and aliphatic hydrocarbons. Many of the compounds have low odour detection thresholds, with some as low as one (1) part per billion (ppb). Quonoline is the only compound that is classified as a hazardous air pollutant (HAP).

Sources of odorous emissions at the rendering facility include:

- Steam from the pressure cooker vessels;
- Fugitive emissions from the working environment, such as:
  - Biological degradation of raw material (e.g. waste intake and storage area);
  - Vapour leaks from machinery (e.g. blood tank); and
  - Wastewater treatment facilities (e.g. earth evaporation pond).

Unit processes responsible for the most offensive odours at the rendering facility include the following:

- Waste intake and storage area;
- Blood tank;
- Pressure cooking vessels;
- Sump; and
- Wastewater treatment facilities (trenches/earthen canals, wastewater sump and earth evaporation pond).

Unit processes that generate less offensive odours include the following:

- The milling and screening of cooked material; and
- The bagging, storage and dispatch of product.

Other emissions generated at the rendering facility include:

- Combustion emissions from the coal-fired boilers. Coal-fired boilers produce suspended particulate matter; ammonia; nitrogen and sulphur oxides; greenhouse gases (Sindt, G.L., 2006) and may also produce VOCs (Midwest Research Institute, 1995);
- Dust generated from vehicles traveling on site as well as the incorrect disposal of ash from the coal-fired boilers; and
- Electricity usage at rendering facilities tends to be high. This usage results in indirect emissions (Scope 2 emission) from the generation of electricity at the power stations.

Water vapour from the cooking vessels is condensed in the condenser and non-condensibles, such as VOCs (volatile organic compounds), pass from the condensers to the biofilter. In the biofilter, the air passes through a biofilter medium within which microorganisms reside. The odour causing particles are a food source for the microorganisms and are therefore consumed by the microorganisms. In this system, the odourous atmospheric emissions generated at the rendering facility (during the cooking process) are captured and degraded (consumed).

In an Atmospheric Impact Assessment conducted for the Chubby Chick rendering facility it was determined that the current scenario would only exceed the odour benchmark (1.5 OU_E/m^3, as a 98^{th} percentile of hourly means over a calendar year) approximately 300m from the eastern boundary of the site. In the simulations the benchmark was not exceeded over any of the surrounding residences. Note that for this study a control efficiency of 79.8% (Sironi S *et al.*, 2007) was used. Should the biofilter not be properly maintained, it may result in an increased odour impact. Figure 43, Figure 44 and Figure 45 provide an illustration of the effect the topography and wind field have on the dispersion of the odour from the rendering facility over the surrounding land use.

Since a majority of the odour sources at the rendering facility are considered fugitive emission sources (such as the waste intake and storage area; the blood tank; the sump; the wastewater treatment facilities, the milling and screening areas; and bagging, storage and dispatch of product area), an Odour Management Plan (OMP) was compiled for the facility, as part of the Atmospheric Emission Licence application. An OMP is a documented, operational plan describing reasonable measures to be implemented by the rendering facility manager in anticipation of the formation of odours and their release from the site.

2.14.2 Atmospheric Emission License Application for the rendering facility

An Atmospheric Emission License Application was submitted to the North West Department of Rural, Environmental and Agricultural Development for the following listed activity in terms of Government Notice No. 893 of 22 November 2013 (formerly Government Notice No. 248 of 31 March 2010) (List of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage):

19. Category 10: Animal matter processing

Description:	Processes for the rendering cooking, drying, dehydrating, digesting, evaporating or protein concentrating of any animal matter not intended for human consumption.
Application:	All installations handling more than 1 ton of raw materials per day.

a) The following special arrangement shall apply:

(i) Best practice measures intended to minimise or avoid offensive odours must be implemented by all installations. These measures must be documented to the satisfaction of the Licensing Authority.

The Department (NWREAD) issued Chubby Chick Enterprises with a Provisional Atmospheric Emission Licence on the 4th of August 2015. The Provisional Atmospheric Emission Licence is valid until the 31st of August 2017.

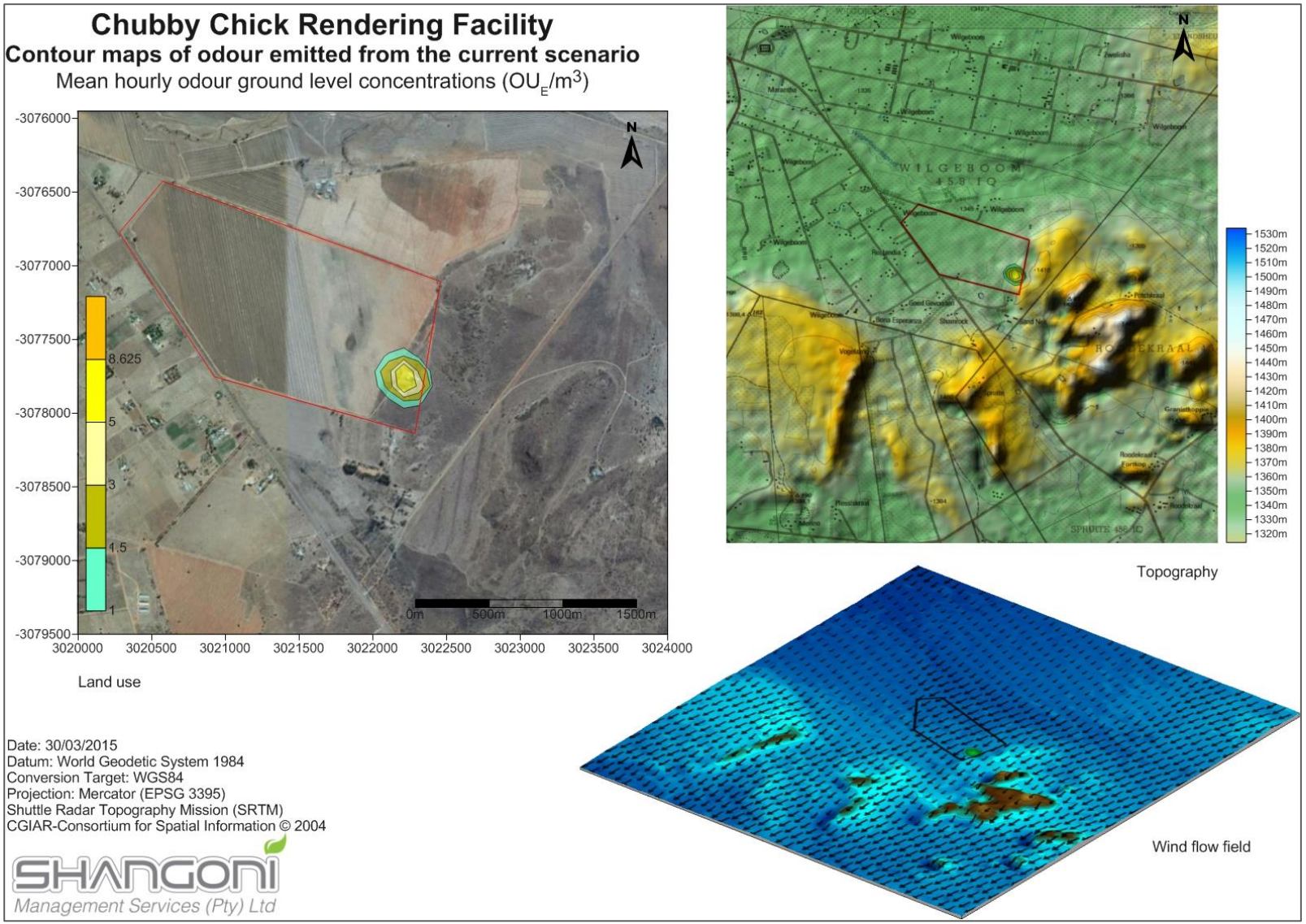


Figure 43: Mean hourly odour ground level concentrations (OUE/m3) for the current scenario.

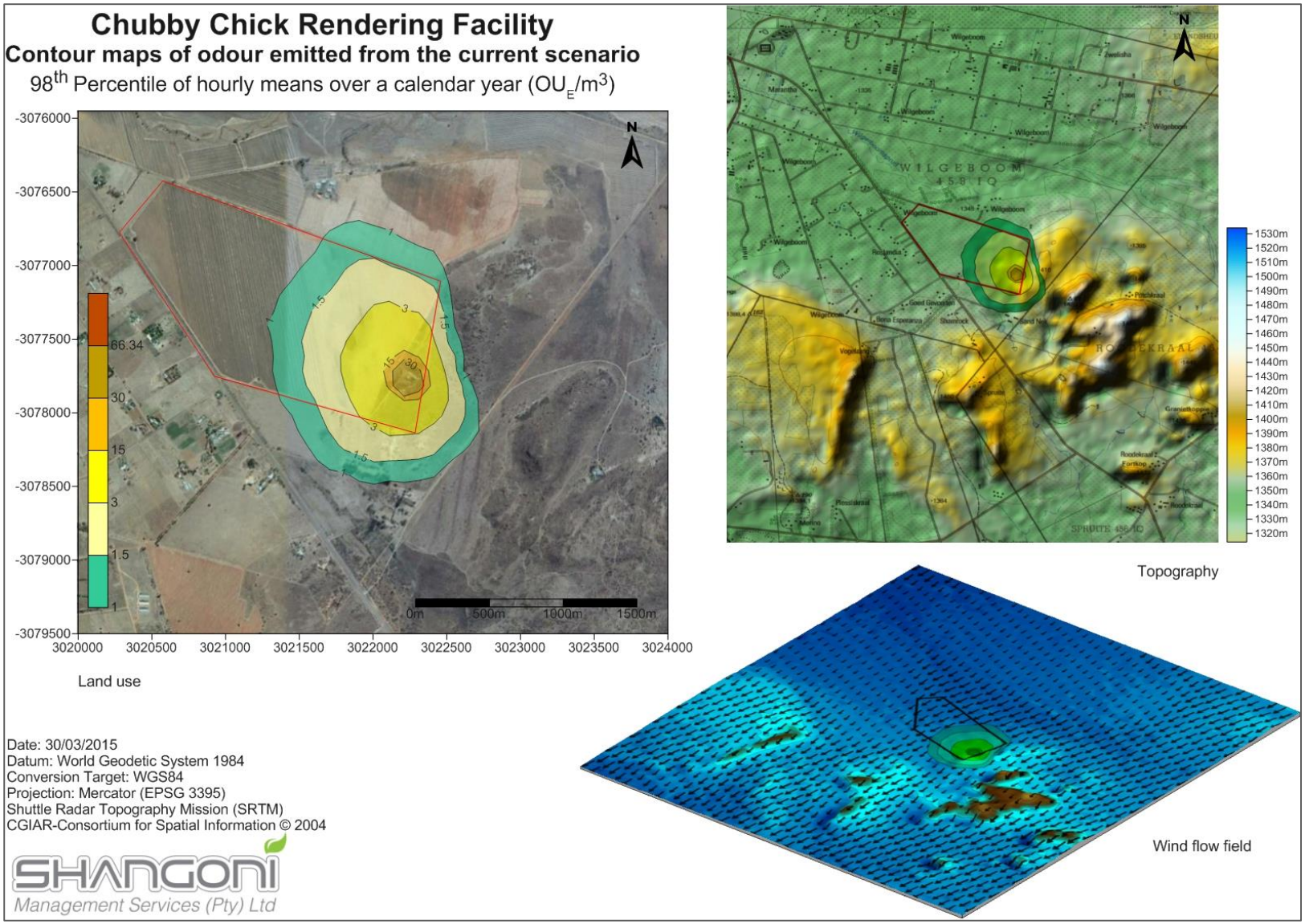


Figure 44: 98th Percentile of hourly means over a calendar (OU_E/m^3) for the current scenario.

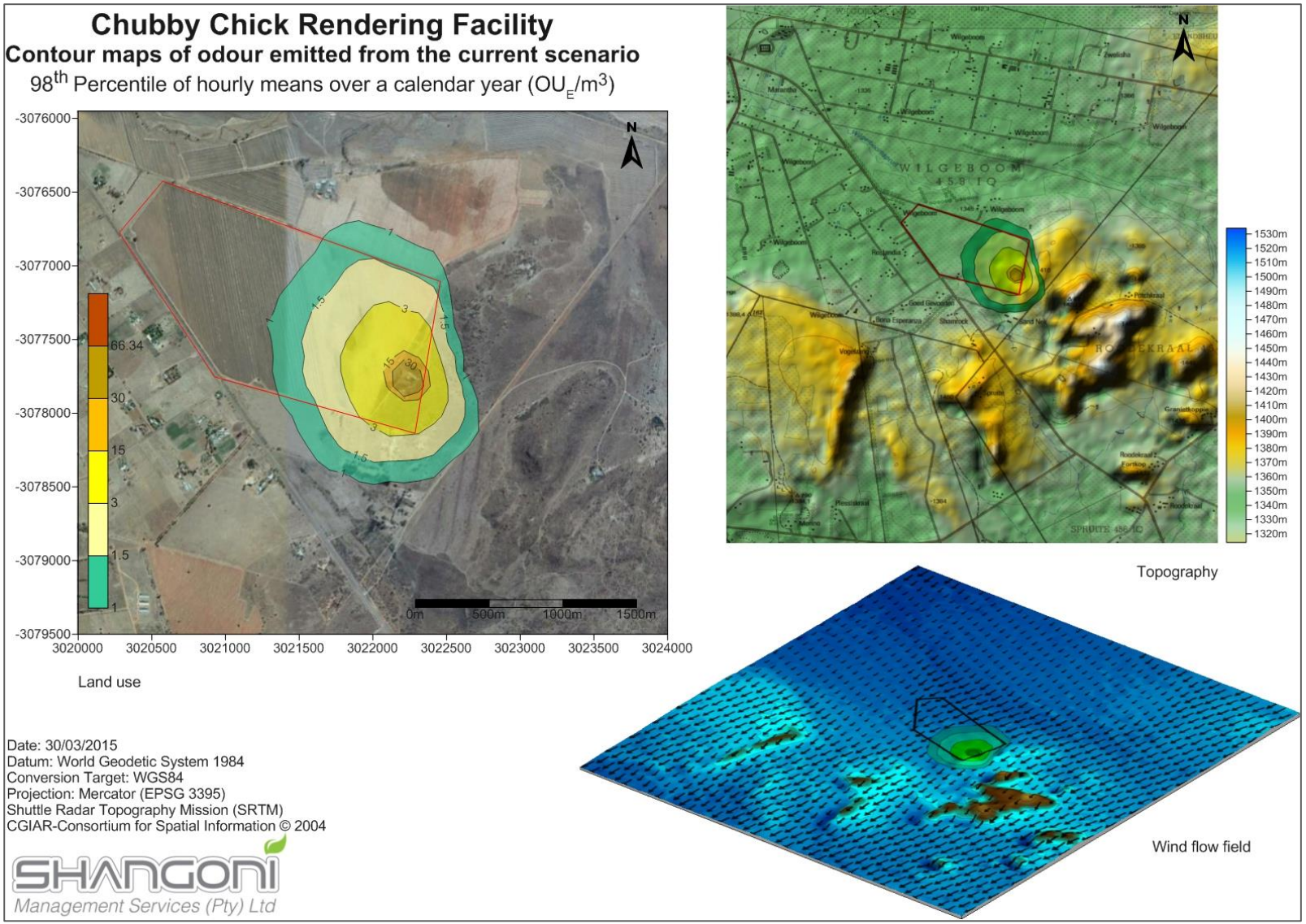


Figure 45: Exceedance of the 1.5 OU_E/m^3 odour threshold for the current scenario.

2.14.3 Noise pollution

Noise in the area is generated mainly by activities at the rendering facility, farming activities, vehicles travelling on nearby roads, such as the Schoemansdrift Road, and general bird and animal life. The main sources of noise are shown in the figure below.

Noise is currently generated at the rendering facility by the vehicles that deliver poultry waste to the facility, those that deliver coal and other raw materials and those that pick up finished product (high-protein feather meal) from the facility. Noise is also generated through the rendering activities themselves, such as at the condensers. As the facility operates 24 hours per day, noise is continually generated to varying degrees.

Figure 46: Main sources of noise in the area

2.15 Visual aspects

The rendering facility is visible from the main road (Schoemansdrift Road) that runs past the site, as shown in the figure below. The facility lies approximately 975 metres from this road. The rendering facility is also visible from open areas surrounding the facility, however, these surrounding properties are mostly owned by the applicant.

Figure 47: View of the site from the Schoemansdrift Road

2.16 Socio-economic aspects

The site is located within the Tlokwe City Council in the Dr. Kenneth Kaunda District Municipality.

2.16.1 Demography

According to the 2011 census, 162 762 people formed part of 52 537 households in the Tlokwe City Council. The average household size is 3.1 people per household. There are 96.6 men for every 100 women in the municipality and the table below shows the age structure of the municipality.

Table 14: Tlokwe City Council age structure -Census 2011 (Statistics South Africa, 2011).

Age Group	Percentage (%)
Under 15 years of age	25.2
15 to 64 years of age	69.1
Over 65 years of age	5.7

Age Group	Percentage (%)
Total population	**100**

2.16.2 Major economic activities

Economic activity in the Tlokwe City Council is driven by agriculture, manufacturing, services and the business sector. The North-West University plays a large role in the provision of services (www.localgovernment.co.za/locals/view/194/tlokwe-local-municipality). The area is also known for diamond mining and the production of maize, sorghum and sunflower (Tlokwe City Council, 2012).

2.16.3 Unemployment and employment

The 2011 census found that the official unemployment rate was 21.6% and the youth unemployment rate (15 to 34 years of age) was 29.5%. The dependency ratio is 44.7 per 100 people between the ages of 15 and 64 years (Statistics South Africa, 2011).

3. APPLICABLE LEGISLATION AND GUIDELINES

The table below provides an indication of the main legislation, policies and / or guidelines applicable to the rendering facility project.

Table 15: Applicable legislation, policies and/or guidelines

Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
Laws of General Application		
The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).	-	To establish a Constitution with a Bill of Rights for the RSA.
Environment Conservation Act, 1989 (Act No. 73 of 1989, as amended).	North West Department of Rural, Environmental and Agricultural Development.	To control environmental conservation.
National Environmental Management Act, 1998 (Act No. 107 of 1998). National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008).	North West Department of Rural, Environmental and Agricultural Development.	To provide for the integrated management of the environment, and to regulate the 'Duty of Care' Principle.
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000, as amended).	-	To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights.
Air Quality and Noise		
National Environmental Management: Air Quality Act (Act No. 39 of 2004).	North West Department of Rural, Environmental and Agricultural Development.	To reform the law regulating air quality to protect the environment by providing reasonable measures for the prevention of pollution. To provide for national norms and standards regulating air quality monitoring, management and control.
Water Management		
National Water Act (NWA), 1998 (Act No. 36 of 1998).	Department of Water and Sanitation.	To provide for fundamental reform of the law relating to water resources.

Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
Waste Management		
National Environmental Management: Waste Act (Act No. 59 of 2008).	National Department of Environmental Affairs.	To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation.
National Environmental Management: Waste Act (Act No 59 of 2008) – Waste Classification and management regulations (GNR. 634 of 23 August 2013).	National Department of Environmental Affairs.	To regulate the classification and management of waste in a manner that supports and implements the provisions of the Waste Act.
Biodiversity		
National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004).	North West Department of Rural, Environmental and Agricultural Development.	To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998.
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	North West Department of Rural, Environmental and Agricultural Development.	To provide for control over the utilisation of the natural agricultural resources of South Africa in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants.
National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998).	North West Department of Rural, Environmental and Agricultural Development.	To reform the law on veldt and forest fires.
Agricultural Pest Act, 1983 (Act No. 36 of 1983, as amended) – GN R276 of 5 March 2004.	North West Department of Rural, Environmental and Agricultural Development.	To regulate plants, plant products and other regulated articles when imported into South Africa.
Soil and Land Management		
National Environmental Management Act, 1998 (Act No. 107 of 1998).	North West Department of Rural, Environmental and Agricultural Development.	To provide for the integrated management of the environment and to regulate the 'Duty of Care' Principle.

Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008).		
Environment Conservation Act, 1989 (Act No. 73 of 1989, as amended).	North West Department of Rural, Environmental and Agricultural Development.	To control environmental conservation.
Heritage and Archaeological Resources		
National Heritage Resources Act No 25 of 1999 (Act No. 25 of 1999, as amended).	South African Heritage Resources Agency	To introduce an integrated and interactive system for the management of the national heritage resources; to promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations.
Protected Areas		
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003, as amended).	North West Department of Rural, Environmental and Agricultural Development.	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Planning of New Activities		
National Environmental Management Act, 1998 (Act No. 107 of 1998). National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008).	North West Department of Rural, Environmental and Agricultural Development.	To provide for the integrated management of the environment and to regulate the 'Duty of Care' Principle.
EIA Regulations R 543, R 544, R 545 and R 546, dated 18 June 2010) under the NEMA, 1998.	North West Department of Rural, Environmental and Agricultural Development.	To regulate and control the authorisation of certain listed activities.
Government Notice (GN) 718: "List of waste management activities that have, or are likely to have a detrimental effect on the environment", dated 2009.	National Department of Environmental Affairs.	To regulate and control the authorisation of certain waste-related listed activities.

4. PUBLIC PARTICIPATION PROCESS

4.1 Objectives of the Public Participation Process (PPP)

Section 24 of the Constitution of the Republic of South Africa of 1996 guarantees everyone the right to an environment that is not harmful to their health and well-being and to have the environment protected for the benefit of present and future generations. In order to give effect to this right, the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), as amended, came into effect.

In terms of Section 24 (4) of NEMA, 2008 procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, ensure, with respect to every application:

- Coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;
- That the findings and recommendations flowing from an investigation, the general objectives of integrated management laid down in NEMA, 2008, and the principles of environmental management set out in Section 2 of NEMA, 2008, are taken into account in any decision made by the organ of state in relation to any proposed policy, programme, process, plan or projects, consequences or impacts; and
- Public information and participation procedures which provide all integrated and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures.

One of the general objectives of integrated environmental management stipulated in Section 23(2)(d) of NEMA, 2008, is to “ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment.”

The National Environmental Management Principles as stipulated in NEMA, 2008, state that;

- “Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably; and
- The participation of all interested and affected parties in environmental governance must be promoted, and all people must have an opportunity to develop the understanding, skills and capacity necessary to achieve equitable and effective participation, and participation by vulnerable and disadvantage persons must be ensured”.

4.2 Legislation and guidelines followed for the PPP

The public participation process for this project was conducted by Shangoni Management Services in terms of:

- The procedures and provisions in terms of the NEMA (as amended), 2008;
- Chapter 6 of the EIA Regulations of 2010;
- GN 807; Public Participation Guideline in the Environmental Impact Assessment Process, dated October 2012; and
- Other relevant legislation such as the Promotion of Access to Information Act (PAIA), 2000.

Refer to Appendix E for an extract regarding the required public participation process to be followed, taken from the relevant legislation and guidelines.

4.3 Public Participation Process followed

4.3.1 Identification and registration of I&APs and key stakeholders

The table below lists the adjacent landowners identified and notified (via hand delivery of letters) of the project. Copies of the notifications to I&APs have been included in Appendix E.

Table 16: List of adjacent landowners identified and notified

Property owner	Address or property description
F.D. Grimbeek	Portion 6 Wilgeboom
Herman Pretorius	Portion 50 Wilgeboom
J.P. Moolman	Holding 51A Wilgeboom
A.B. Hill	Portion 177 Wilgeboom
P.M. Fouché	Holding 52 Wilgeboom

All organs of state that may have jurisdiction in respect of the project are considered to be registered I&APs.

The following organs of state were notified of the project:

- Tlokwe City Council;
- Dr. Kenneth Kaunda District Municipality;
- North West Department of Agriculture and Rural Development (now the North West Department of Rural, Environmental and Agricultural Development);
- South African Heritage Resources Agency (SAHRA); and
- Department of Water and Sanitation (formerly the Department of Water Affairs).

Copies of the notifications to the organs of state have been included in Appendix E, and examples are included in the figures below. Proof of postage of the Notification Letters is given in Figure 50 and proof of the Notification Letters uploaded to SAHRIS is shown in Figure 51.

SHANGONI
Management Services (Pty) Ltd

Shangoni Management Services Pty (Ltd)
Reg: 2002/000002/07 VAT: 489 019 1069

Tel +27(0)12 807 7036 Fax +27(0)12 807 1014
E-mail info@shangoni.co.za www.shangoni.co.za
Block C8, Block@Nature 472 Botterklapper Street The Willows 0081
PO Box 74726 Lynnwood Ridge 0040

23 January 2013

NWDEDECT EIA Ref: NWP/EIA/62/2013; DEA EIA Ref: 12/9/11/L1392/7; SMS Ref: FOU-POT-12-05-02

South African Heritage Resources Agency (SAHRA)
PO Box 4637
Cape Town
8000

Attention: Mr. Phillip Hine

NOTIFICATION OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION: CHUBBY CHICK RENDERING FACILITY: APPLICATION FOR ENVIRONMENTAL AUTHORISATION AND WASTE MANAGEMENT-, WATER USE- AND ATMOSPHERIC EMISSION- LICENSES

The Cycle City (Pty) Ltd. (trading as Chubby Chick Enterprises) rendering facility is situated on Portion 198 of the farm Wilgeboom 458 IQ, North West Province. The operation requires environmental authorisation as well as the following licenses: A Waste Management License in terms of section 19 and 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), a Water Use License in terms of Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998) and an Atmospheric Emission License in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).

The rendering facility will require environmental authorisation subject to a full Scoping and Environmental Impact Assessment Process as required by Sections 26 to 35 of Government Notice R. 543 of the EIA Regulations of 18 June 2010.

Shangoni Management Services (Pty) Ltd. was appointed as the Independent Environmental Assessment Practitioner (EAP) responsible for the Scoping and Environmental Impact Assessment process. Shangoni has submitted, on behalf of Cycle City (Pty) Ltd. (T/A Chubby Chick Enterprises), an application for environmental authorisation to the North West Department of Economic Development, Environment, Conservation and Tourism for atmospheric emission- and water use- license activities. An application for a waste management license has also been submitted to the National Department of Environmental

Figure 48: Example of the notification letters sent (page 1)

Affairs. An atmospheric emission license application will be submitted to the relevant authority and a water use license application will be submitted to the Department of Water Affairs.

Attached please find a background information document, locality map of the site, and a stakeholder registration form in respect of the application. Should you wish to register as an Interested and Affected party for the above mentioned project, please complete the attached stakeholder registration form and send it to us before or on the **3rd of March 2014.** Should you wish to not be part of this EIA process, it will be appreciated if we could receive a written confirmation thereof to enable us to continue with the application.

Please do not hesitate to contact the undersigned should you require any additional information.

Contact Details: Shangoni Management Services
Miss Lizette Crous
E-mail: lizette@shangoni.co.za
Fax 2 E-mail: 086 643 5360
Fax: 012 807 1014
Online Participation: Go to www.shangoni.co.za and click on Public Documents.

Regards,

Lizette Crous
Environmental Assessment Practitioner

Figure 49: Example of the notification letters sent (page 2)

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)
Full tracking and tracing/Volledige volg en spoor

Post Office

Name and address of sender:
Naam en adres van afsender: Shangoni Management Services (Pty) Ltd. PO Box 74926 Lynnwood Ridge 0040 Lizette Cabuts

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee / Naam en adres van geadresseerde	Insured amount / Versekerde bedrag	Insurance fee / Versekeringsgeld	Postage / Posgeld	Service fee / Diensgeld	Affix Track and Trace customer copy / Plak Volg-en-Spoor-kliëntafskrif
1	Tlokwe City Council, Mr. Pieter Labuschagne, PO Box 113, Potchefstroom 2520					REGISTERED LETTER RD 856 131 613 ZA CUSTOMER COPY 301028R
2	Tlokwe City Council - Ward 2, Mr. A. A. Ierou, PO Box 113, Potchefstroom 2520					REGISTERED LETTER RD 856 131 785 ZA CUSTOMER COPY 301028R
3	South African Heritage Resource Agency (SAHRA), Mr. Philip Hine, PO Box 4637, Cape Town 8000					REGISTERED LETTER RD 856 131 777 ZA CUSTOMER COPY 301028R
4	North West Department of Agriculture and Rural Development, Dr. Kgabi Mogajan, Private Bag X2039, Mmabatho 2735					REGISTERED LETTER RD 856 131 763 ZA CUSTOMER COPY 301028R
5	Dr. Kenneth Kaunda District Municipality, Faith Lephale, Private Bag X 5017, Klerksdorp 2570					REGISTERED LETTER RD 856 131 750 ZA CUSTOMER COPY 301028R
6	Dr. Kenneth Kaunda District Municipality, Vutomi Ndlovu, Private Bag X 5017, Klerksdorp 2570					REGISTERED LETTER RD 856 131 746 ZA CUSTOMER COPY 301028R
7	Department of Water Affairs - Upper Vaal WMA, Helen Makwela, Private Bag X995, Pretoria 0001					REGISTERED LETTER RD 856 131 732 ZA CUSTOMER COPY 301028R
8	Dr. Kenneth Kaunda District Municipality, Responsible Air Quality officer, Private Bag X5017, Klerksdorp 2570					REGISTERED LETTER RD 856 131 627 ZA CUSTOMER COPY 301028R
9						
10						
	Total / Totaal	R	R	R	R	

Number of letters posted / Getal briewe gepos: 7 Seven

Signature of client / Handtekening van kliënt:

Signature of accepting officer / Handtekening van aanneembeampte:

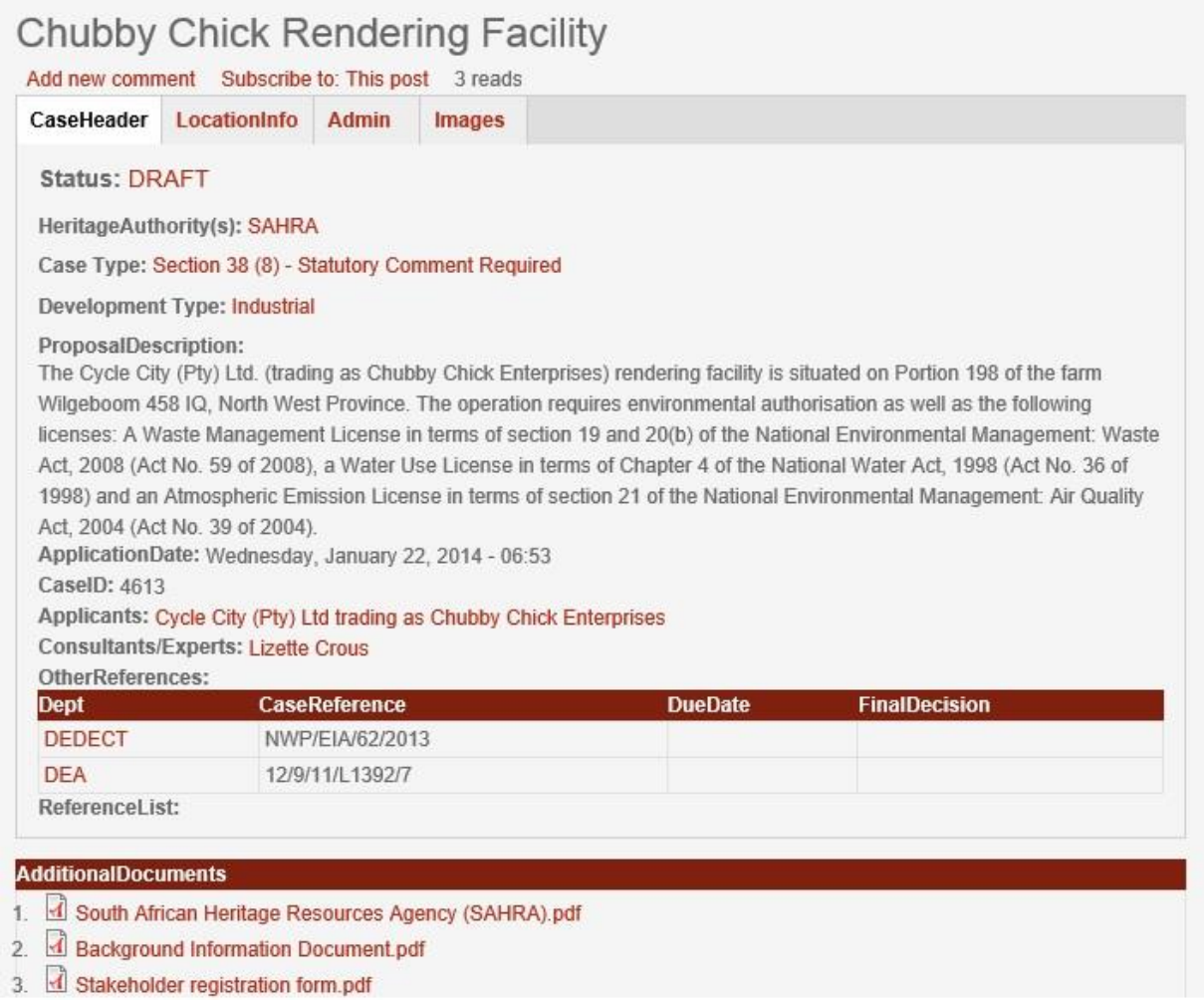
Date stamp / Datumstempel: WILLOW WAY POST OFFICE 23 JAN 2014 0041

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R200,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentere bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

MASIQHAME PRINTERS 701248

Figure 50: Proof of Postage of Notification Letters



Chubby Chick Rendering Facility

Add new comment Subscribe to: This post 3 reads

CaseHeader | LocationInfo | Admin | Images

Status: DRAFT

HeritageAuthority(s): SAHRA

Case Type: Section 38 (8) - Statutory Comment Required

Development Type: Industrial

ProposalDescription:
The Cycle City (Pty) Ltd. (trading as Chubby Chick Enterprises) rendering facility is situated on Portion 198 of the farm Wilgeboom 458 IQ, North West Province. The operation requires environmental authorisation as well as the following licenses: A Waste Management License in terms of section 19 and 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), a Water Use License in terms of Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998) and an Atmospheric Emission License in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).

ApplicationDate: Wednesday, January 22, 2014 - 06:53

CaseID: 4613

Applicants: Cycle City (Pty) Ltd trading as Chubby Chick Enterprises

Consultants/Experts: Lizette Crous

OtherReferences:

Dept	CaseReference	DueDate	FinalDecision
DEDECT	NWP/EIA/62/2013		
DEA	12/9/11/L1392/7		

ReferenceList:

AdditionalDocuments

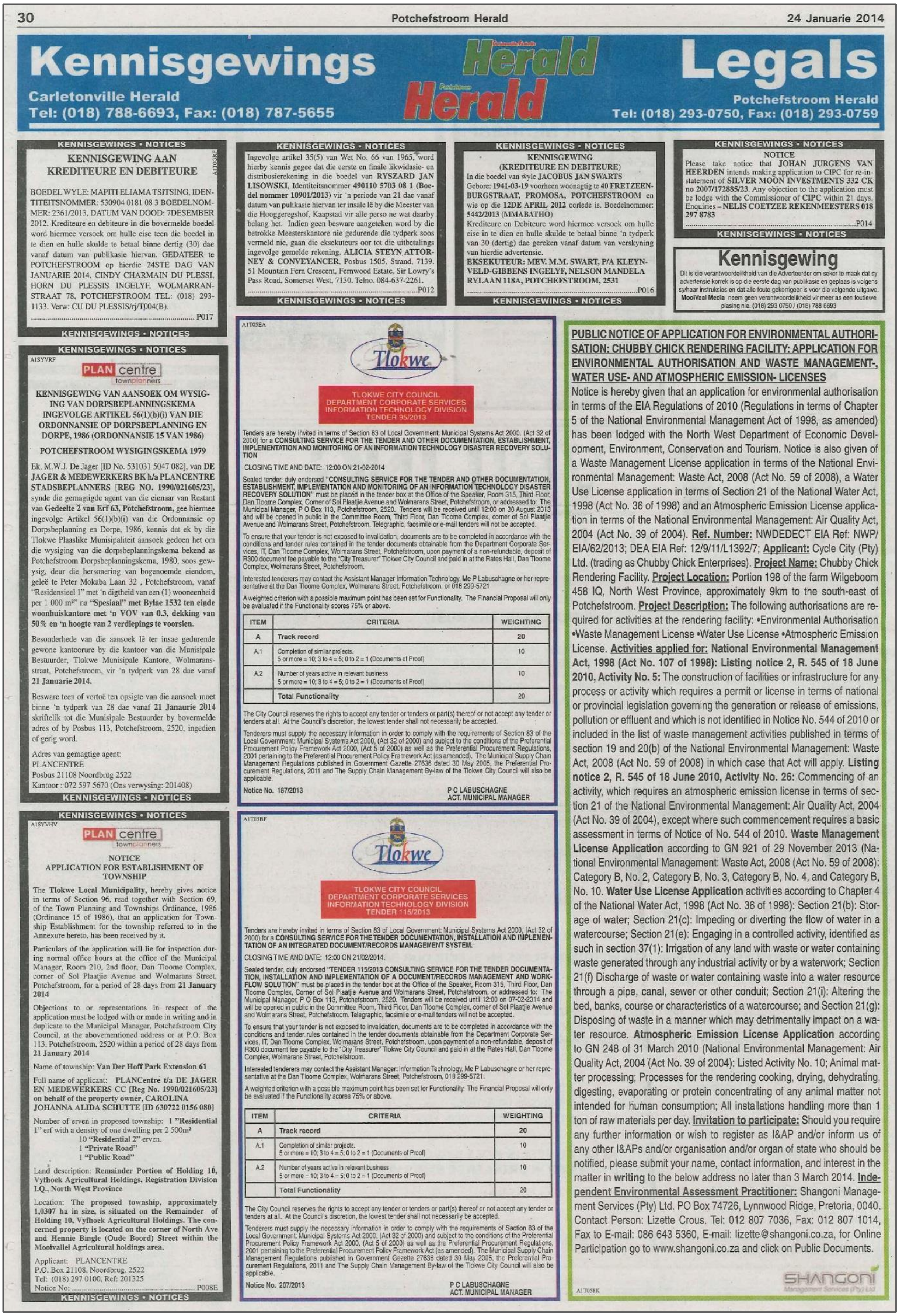
1. South African Heritage Resources Agency (SAHRA).pdf
2. Background Information Document.pdf
3. Stakeholder registration form.pdf

Figure 51: Proof of Uploading the Notification Letters to SAHRIS

4.3.2 Methods of notification

4.3.2.1 Advertisement(s)

The proposed project was advertised in two local newspapers namely, the Potchefstroom Herald on 24th of January 2014 and the Beeld newspaper on the 23rd of January 2014. These newspapers were found to be the most appropriate newspapers in terms of their accessibility to I&APs. A copy of the advertisements and proof of their placement is attached in Appendix E and is also given in the figures below.



30 Potchefstroom Herald 24 Januarie 2014

Kennisgewings — Carletonville Herald Tel: (018) 788-6693, Fax: (018) 787-5655 — **Legals** — Potchefstroom Herald Tel: (018) 293-0750, Fax: (018) 293-0759

PUBLIC NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION: CHUBBY CHICK RENDERING FACILITY: APPLICATION FOR ENVIRONMENTAL AUTHORISATION AND WASTE MANAGEMENT-, WATER USE- AND ATMOSPHERIC EMISSION- LICENSES

Notice is hereby given that an application for environmental authorisation in terms of the EIA Regulations of 2010 (Regulations in terms of Chapter 5 of the National Environmental Management Act of 1998, as amended) has been lodged with the North West Department of Economic Development, Environment, Conservation and Tourism. Notice is also given of a Waste Management License application in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), a Water Use License application in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) and an Atmospheric Emission License application in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). **Ref. Number:** NWDEDECT EIA Ref: NWP/EIA/62/2013; DEA EIA Ref: 12/9/11/L1392/7; **Applicant:** Cycle City (Pty) Ltd. (trading as Chubby Chick Enterprises). **Project Name:** Chubby Chick Rendering Facility. **Project Location:** Portion 198 of the farm Wilgeboom 458 IQ, North West Province, approximately 9km to the south-east of Potchefstroom. **Project Description:** The following authorisations are required for activities at the rendering facility: •Environmental Authorisation •Waste Management License •Water Use License •Atmospheric Emission License. **Activities applied for: National Environmental Management Act, 1998 (Act No. 107 of 1998): Listing notice 2, R. 545 of 18 June 2010, Activity No. 5:** The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 and 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply. **Listing notice 2, R. 545 of 18 June 2010, Activity No. 26:** Commencing of an activity, which requires an atmospheric emission license in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), except where such commencement requires a basic assessment in terms of Notice of No. 544 of 2010. **Waste Management License Application** according to GN 921 of 29 November 2013 (National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008): Category B, No. 2, Category B, No. 3, Category B, No. 4, and Category B, No. 10. **Water Use License Application** activities according to Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998): Section 21(b): Storage of water; Section 21(c): Impeding or diverting the flow of water in a watercourse; Section 21(e): Engaging in a controlled activity, identified as such in section 37(1): Irrigation of any land with waste or water containing waste generated through any industrial activity or by a waterwork; Section 21(f) Discharge of waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit; Section 21(i): Altering the bed, banks, course or characteristics of a watercourse; and Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource. **Atmospheric Emission License Application** according to GN 248 of 31 March 2010 (National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004): Listed Activity No. 10; Animal matter processing; Processes for the rendering cooking, drying, dehydrating, digesting, evaporating or protein concentrating of any animal matter not intended for human consumption; All installations handling more than 1 ton of raw materials per day. **Invitation to participate:** Should you require any further information or wish to register as I&AP and/or inform us of any other I&APs and/or organisation and/or organ of state who should be notified, please submit your name, contact information, and interest in the matter in **writing** to the below address no later than 3 March 2014. **Independent Environmental Assessment Practitioner:** Shangoni Management Services (Pty) Ltd. PO Box 74726, Lynnwood Ridge, Pretoria, 0040. Contact Person: Lizette Crous. Tel: 012 807 7036, Fax: 012 807 1014, Fax to E-mail: 086 643 5360, E-mail: lizette@shangoni.co.za, for Online Participation go to www.shangoni.co.za and click on Public Documents.

SHANGONI Management Services (Pty) Ltd

Figure 52: Proof of advertisement placement in the Potchefstroom Herald newspaper

Donderdag 23 Januarie 2014 Sport24

25

Geklassifiseer

Beeld

REGSKENNISGEWINGS & TENDE

4001 Eggeldings-/huweliks-kontrakte-/aansoeke

4005 Hofbeweë /

4040 Verlore dokumen

4045 OIS (omgewingsi studies)

CHUBBY CHICK RENDERING FACILITY NOTICE

PUBLIC NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION: CHUBBY CHICK RENDERING FACILITY: APPLICATION FOR ENVIRONMENTAL AUTHORISATION AND WASTE MANAGEMENT-, WATER USE- AND ATMOSPHERIC EMISSION- LICENSES

Notice is hereby given that an application for environmental authorisation in terms of the EIA Regulations of 2010 (Regulations in terms of Chapter 5 of the National Environmental Management Act of 1998, as amended) has been lodged with the North West Department of Economic Development, Environment, Conservation and Tourism. Notice is also given of a Waste Management License application in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), a Water Use License application in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) and an Atmospheric Emission License application in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). Ref. Number: NWDEPECT EIA Ref: NWP/EIA/62/2013; DEA EIA Ref: 12/9/11/L1392/7; Applicant; Cycle City (Pty) Ltd. (trading as Chubby Chick Enterprises). Project Name: Chubby Chick Rendering Facility. Project Location: Portion 198 of the farm Wilgeboom 458 IQ, North West Province, approximately 9km to the south-east of Potchefstroom. Project Description: The following authorisations are required for activities at the rendering facility: ?Environmental Authorisation ?Waste Management License ?Water Use License ?Atmospheric Emission License. Activities applied for: National Environmental Management Act, 1998 (Act No. 107 of 1998): Listing notice 2, R. 545 of 18 June 2010, Activity No. 5: The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 and 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), in which case that Act will apply. Listing notice 2, R. 545 of 18 June 2010, Activity No. 26: Commencing of an activity, which requires an atmospheric emission license in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), except where such commencement requires a basic assessment in terms of Notice of No. 544 of 2010. Waste Management License Application according to GN 921 of 29 November 2013 (National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008); Category B, No. 2, Category B, No. 3, Category B, No. 4, and Category B, No. 10. Water Use License Application activities according to Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998); Section 21(b): Storage of water; Section 21(c): Impeding or diverting the flow of water in a watercourse; Section 21(e): Engaging in a controlled activity, identified as such in section 37(1): Irrigation of any land with waste or water containing waste generated through any industrial activity or by a waterwork; Section 21(f) Discharge of waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit; Section 21(i): Altering the bed, banks, course or characteristics of a watercourse; and Section 21(j): Disposing of waste in a manner which may detrimentally impact on a water resource. Atmospheric Emission License Application according to GN 248 of 31 March 2010 (National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004); Listed Activity No. 10; Animal matter processing: Processes for the rendering, cooking, drying, dehydrating, digesting, evaporating or protein concentrating of any animal matter not intended for human consumption; All installations handling more than 1 ton of raw materials per day. Invitation to participate: Should you require any further information or wish to register as I&AP and/or inform us of any other I&APs and/or organisation and/or organ of state who should be notified, please submit your name, contact information, and interest in the matter in writing to the below address no later than 3 March 2014. Independent Environmental Assessment Practitioner: Shangoni Management Services (Pty) Ltd, P.O. Box 74726, Lynnwood Ridge, Pretoria, 0040. Contact Person: Lizette Crous. Tel: 012 807 7036, Fax: 012 807 1014, Fax to E-mail: 086 643 5360, E-mail: lizette@shangoni.co.za, for Online Participation go to www.shangoni.co.za and click on Public Documents.

CHUBBY JAN 23(5)4045

LIQUOR CITY WESTWOOD

KENON ELECTRICS

DORPS-BEPLANNIN

DANFERN VALLEY ESTATE

PENSIOEN-/VOORSORGFONDSE

SENSARAMA EDMS BPK

HERREGISTRASIES

BINUS BRITS TOWN PLANNING SOLUTIONS

ARTIN SLUIT KONTRAK

Tian Meyer

Martin Bezuidenhout, wat sy Leeus-trui nou vir die een van Griekwas verruil het. Foto's: LEE WARREN | GALLO IMAGES

Europese eerbewys

...os slyp Doer Onder vir Spele

*SA span

Mans: Myles Brown, Ryan Coetzee, Jarred Crous, Charl Crous, Clayton Jimmie, Chad le Clos, Caydon Muller, Darren Murray, Luke Pendock, Christopher Reid, Daniel Ronaldson, Ayrton Sweeney, Calvyn Justus, Mark Matthew.

Vroue: Erin Gallagher, Lehesta Kemp, Justine MacFarlane, Trudi Maree, Rita Naude, Kyna Pereira, Karin Prinsloo, Marlies Ross, Tatjana Schoenmaker, Nathania van Niekerk, Rene Warnes.

Oopwater: Troyden Prinsloo, Danie Marais.

Figure 53: Proof of advertisement placement in the Beeld newspaper

4.3.2.2 Placement of site- and public notices

Notice was also given to Interested and Affected Parties via the placement of notice boards. Notice boards were placed at two different, noticeable and conspicuous places (at the access road to the facility as well as on the fence of the facility itself) on the 23rd of January 2014. Photographs of the site notices are attached in Appendix E. Refer also to the figures below.

Figure 54: Site Notice 1

Figure 55: Site Notice 1 (zoomed in)

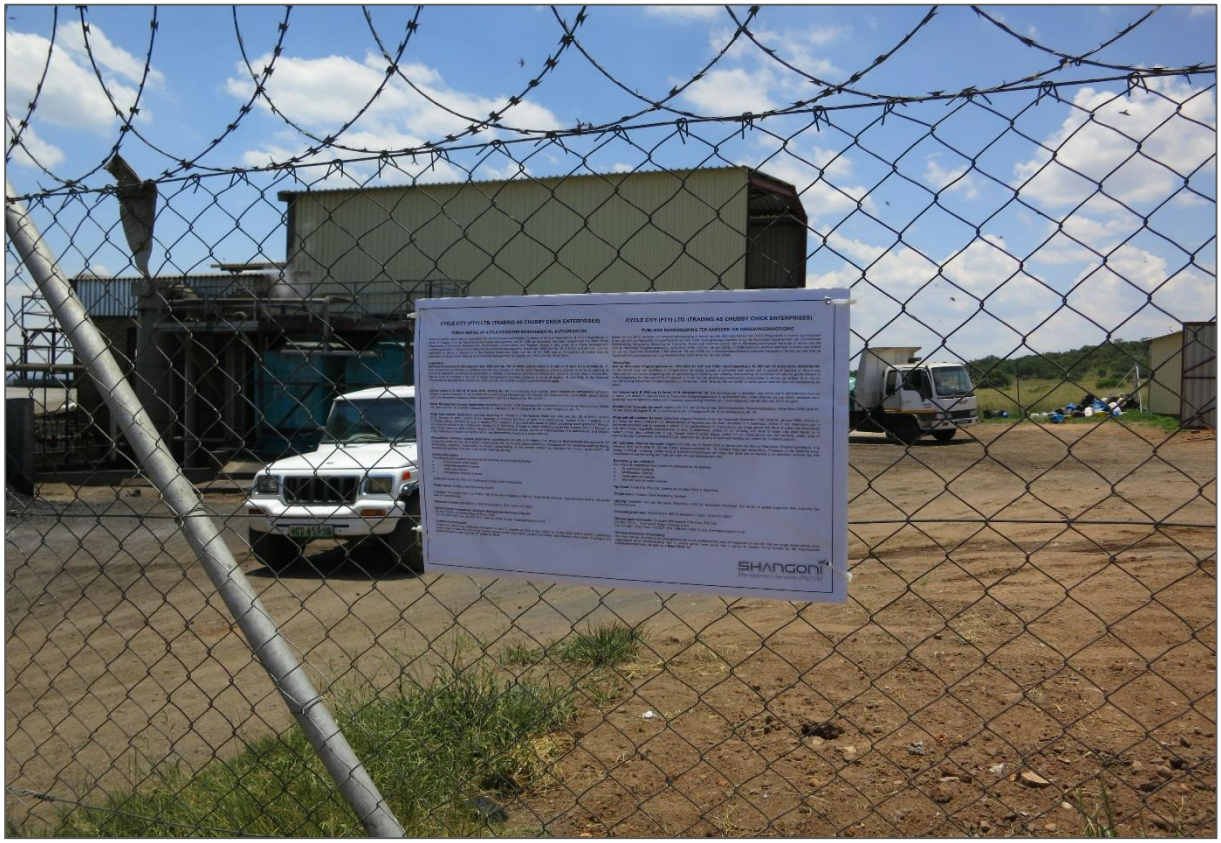


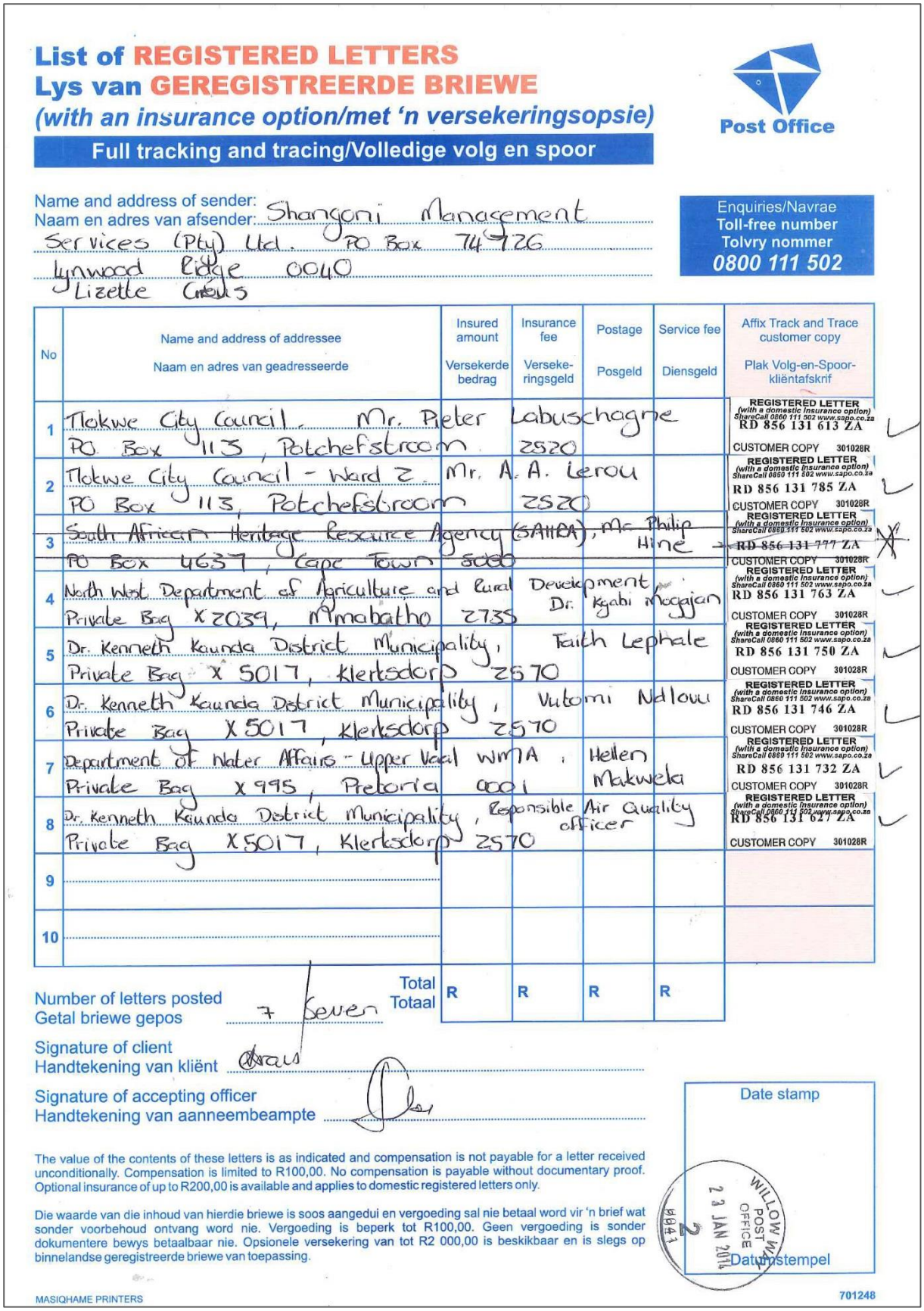
Figure 56: Site notice 2

4.3.2.3 Notification Letter and Background Information Document

Notification Letters and the Background Information Document (BID) developed for the proposed project provides background information pertaining to the project and are intended to inform I&APs of the proposed project. The BID also includes a registration form that potential I&APs, stakeholders and organs of state are encouraged to complete in order to register as I&APs for the project.

The notification letters and the BID were made available to all landowners adjacent to the proposed site, as well as to all organs of state that may have jurisdiction over any aspect of the activity. This correspondence was sent via registered mail, email and hand delivery where required. The BID will also be made available to any other person who becomes involved in the on-going Public Participation Process.

Copies of the notification letters and the BID and proof of their distribution to the adjacent landowners and organs of state have been attached under Appendix E. Proof of postage of the notification letters is given in the figures below. Further proofs are also attached under Appendix E.



List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)

Full tracking and tracing/Volledige volg en spoor

Post Office

Name and address of sender:
Naam en adres van afsender: Shangoni Management Services (Pty) Ltd. PO Box 74926 Lynnwood Ridge 0040 Lizette Greeff

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee / Naam en adres van geadresseerde	Insured amount / Versekerde bedrag	Insurance fee / Versekeringsgeld	Postage / Posgeld	Service fee / Diensgeld	Affix Track and Trace customer copy / Plak Volg-en-Spoor-kliëntafskrif
1	Tlokwe City Council, Mr. Pieter Labuschagne, PO Box 113, Potchefstroom 2520					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 613 ZA CUSTOMER COPY 301028R
2	Tlokwe City Council - Ward 2, Mr. A. A. Leroux, PO Box 113, Potchefstroom 2520					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 785 ZA CUSTOMER COPY 301028R
3	South African Heritage Resource Agency (SAHRA), Mr. Philip Hine, PO Box 4637, Cape Town 8000					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 777 ZA CUSTOMER COPY 301028R
4	North West Department of Agriculture and Rural Development, Dr. Kgabi Mogajan, Private Bag X2039, Mmabatho 2735					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 763 ZA CUSTOMER COPY 301028R
5	Dr. Kenneth Kaunda District Municipality, Faith Lephale, Private Bag X 5017, Klerksdorp 2570					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 750 ZA CUSTOMER COPY 301028R
6	Dr. Kenneth Kaunda District Municipality, Vutomi Ndlovu, Private Bag X5017, Klerksdorp 2570					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 746 ZA CUSTOMER COPY 301028R
7	Department of Water Affairs - Upper Vaal WMA, Helen Makweka, Private Bag X995, Pretoria 0001					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 732 ZA CUSTOMER COPY 301028R
8	Dr. Kenneth Kaunda District Municipality, Reponsible Air Quality officer, Private Bag X5017, Klerksdorp 2570					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 856 131 627 ZA CUSTOMER COPY 301028R
9						
10						
	Total / Totaal	R	R	R	R	

Number of letters posted / Getal briewe gepos: 7 Seven

Signature of client / Handtekening van kliënt: Greeff

Signature of accepting officer / Handtekening van aanneembeampte:

Date stamp: WILLOW WAY POST OFFICE 23 JAN 2014 0841 Datumstempel

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R200,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentere bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

MASIQHAME PRINTERS 701248

Figure 57: Proof of postage of notification letters

4.3.3 I&AP register

Once all landowners, adjacent landowners, organs of state and the public were notified of the proposed project, an I&AP register was compiled. The table below provides an extract of the I&AP Register indicating the organs of state and other I&APs that have been registered.

The Departments and Organs of State have automatically been registered and where registration requests were received from other parties, such as adjacent land owners, these have been included in the register. The register is given in the table below and is also attached in Appendix E.

Table 17: Registered I&APs

No.	Name	Department / Interest
Organs of State		
1	Ms Ntombi S. Rikhotso	Tlokwe City Council - Environmental Management Unit
2	Faith Lephale, Vutomi Ndlovu, T.M. Ramatlhape-Tsotetsi, Nokukhanya Xaba and Zamisile Mabaso	Dr. Kenneth Kaunda District Municipality
3	HOD: Dr Kgabi Mogajan	North West Department of Agriculture and Rural Development
4	Mr. Phillip Hine	South African Heritage Resources Agency (SAHRA)
5	Hellen Makwela	Department of Water and Sanitation
Registered I&APs		
1	M.M. Coetzee	Adjacent land owners and/or living in close proximity to the site
2	Mrs Nelien Kleynhans	Adjacent land owners and/or living in close proximity to the site
3	Mr Johannes P.S. Gerber	Adjacent land owners and/or living in close proximity to the site
4	Mrs Martha Jan	Adjacent land owners and/or living in close proximity to the site
5	Mr Eddie Wentzel	Adjacent land owners and/or living in close proximity to the site
6	Mr Edwin D. Lovering	Adjacent land owners and/or living in close proximity to the site
7	Mrs Bessie E. van Burick	Adjacent land owners and/or living in close proximity to the site
8	Mr Pieter and Mrs Jacolien du Plooy	Adjacent land owners and/or living in close proximity to the site
9	Mr Gerhard J. Nel	Adjacent land owners and/or living in close proximity to the site

Refer also to Appendix E for a detailed I&AP Register including contact information for all registered organs of state and I&APs.

4.3.4 Public meeting(s)

No public meetings have been held, nor is one anticipated at this stage.

4.3.5 Access and opportunity to comment on written submissions

4.3.5.1 Scoping Report

The draft Scoping Report was made available to the public for review for a period of fourty (40) days, from 27 May to 14 July 2014. An electronic copy of the draft Scoping Report was also posted on the Shangoni Management Services' website (www.shangoni.co.za) for public comment for the same review period of fourty days.

All the registered I&APs were notified of the availability of the draft Scoping Report for public review by 27 May 2014. The I&APs were also informed to submit any comments to Shangoni Management Services by no later than 14 July 2014.

4.3.5.2 Environmental Impact Assessment Report

Similar to the Scoping Report, the draft EIA and EMP will be made available to the public for review for a period of fourty (40) days. An electronic copy of the draft EIR and EMP will also be posted on the Shangoni Management Services' website (www.shangoni.co.za) for public comment for the same review period of fourty days.

4.3.6 Consultation with the relevant Authorities

4.3.6.1 Application form in terms of the NEMA, 1998

The Environmental Authorisation application form in terms of NEMA, 1998, was submitted to the North West Department of Rural, Environmental and Agricultural Development on the 7th of November 2013. A reference number (NWP/EIA/62/2013) was issued by the Department on the 27th of November 2013.

4.3.6.2 Authorities meeting(s)

No meetings with the North West Department of Rural, Environmental and Agricultural Development have been required thus far.

4.3.7 Further consultation with relevant Authorities

On the 3rd of January 2015, a letter was received from the North West Department of Rural, Environmental and Agricultural Development wherein it was indicated that the final Scoping Report for this project has been accepted. Below is a summary of the letter from the Department, as well as Shangoni's responses to each point of the Department's letter.

Letter from the NWREAD	Response from Shangoni
ACCEPTANCE OF THE SCOPING REPORT FOR THE PROPOSED CONSTRUCTION OF CHUBBY CHICK RENDERING FACILITY ON	1. Noted. 2. (a) All specialist studies identified during the Scoping Phase have been completed,

PORTION 198 OF THE FARM WILGEBOOM 458 IQ, TLOKWE LOCAL MUNICIPALITY, NORTH WEST PROVINCE 1. The Scoping Report (SR) and plan of study for Environmental Impact Assessment (EIA) which was submitted in terms of regulation 29 of the EIA Regulations, 2010, for the above-mentioned application and received by the Department on 11 August 2014, and a site inspection conducted by the Department officials Ms Thembekile Makuwa and Ms Bobaki Buthelezi with the Safety Health and Environment Officer Mr E. Kruger of Cycle City (Pty) Ltd on the 15 October 2014 refers. 2. This Scoping Report and plan of study for EIA has been reviewed by this Department and has been found to be acceptable. However the following information should be addressed in detail in the EIA phase of this project: a. All specialist studies that were identified during the Scoping Phase must be undertaken and included in the Environmental Impact Assessment Report. This includes but not limited to the Wetland Specialist study. b. Declaration of interest forms signed by all specialists who compiled specialist reports that will form part of the Environmental Impact Assessment Report must be submitted. c. A detailed project description with specific reference to the relevant wastewater treatment facility must be provided. d. A wastewater treatment process flow must be included in the Environmental Impact Assessment Report, including facility illustrations.	incorporated into this Environmental Impact Assessment Report and are also attached under Appendix D of this report. (b) Specialist declaration forms have been signed by all specialists conducting specialist studies for this project and the declarations are attached under Appendix D. (c) A detailed project description is provided under Section 1.5 of this report. (d) The proposed wastewater treatment process flow is given in Section 1.5.3 of this report. (e) An alternatives assessment is given in Section 6 of this report. (f) A detailed layout plan will be provided as soon as it has been finalised by the applicant. 3. Noted. 4. The earth evaporation dam was constructed in 1996. The bio-filter was installed in October 2014. It should, however, be noted that Environmental Authorisation is not required for the installation of an abatement technology or equipment, such as a bio-filter. The listed activity in terms of the NEM:AQA, 20044, refers to the process of rendering and not the installation of abatement equipment. 5. Noted. 6. Noted. The draft Environmental Impact Assessment Report, including all specialist studies, will be made available to all registered Interested and Affected Parties for comment. This will include all organs of state that have jurisdiction over certain aspects of the proposed development. 7. The applicant has been informed that construction activities on site must not

e. The description of alternatives must be included in the EIA report and should be based on the proposed activity, not the existing rendering facility. f. A detailed layout that indicates all components of the proposed development must be submitted. Such a plan must have a reference number, date and details of the person who compiled a plan. 3. Following the review of the Scoping Report and findings of the site inspection, the Department has identified that Bio filters has already being installed, the rendering facility and evaporation dams are already existing on site. As a result, these activities will not be considered in this application. 4. The Environmental Assessment Practitioner is further requested to provide the following information to the Department: • The commencement date for the installation of Bio-filters and construction of evaporation dams. (This information is required to determine if whether these facilities commenced without Environmental Authorisation). You may accordingly proceed with undertaking the environmental impact assessment in accordance with the requirements of regulation 31 of Government Notice No. R.543 of 18 June 2010 and the tasks that are outlined above, and in the plan of study for Environmental Impact Assessment.	commence until an Environmental Authorisation has been issued. 8. Noted.

4.3.8 Comments and responses

All issues, comments and questions received from I&APs thus far have been summarised in the table below. Copies of the comments received have also been included in Appendix E.

Table 18: Comments and responses report

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
M.M. Coetzee	PlanServ Town & Regional Planning Services	10-02-2014	Fax	**RE: ENVIRONMENTAL AUTHORISATION - PORTION 198 OF THE FARM WILGEBOOM 458 I.Q.** The above mentioned as well as the site notice placed on the above mentioned property have reference. My husband owns Potion 173 of the farm Wilgeboom 458 I.Q and we also reside on the property. We are very concerned about the air quality in the area. We are located approximately 1.96km from the rendering facility and the smell is unbearable some days. We are not against the land use in principle but request that proper odour control is carried out in order to accommodate the residents in Wilgeboom area. The area consist mainly of agricultural holdings, but some other land uses such as a wedding venue (located approximately 1.5km from the rendering facility), can also be found in the area. Surely,	**Response from Shangoni:** Dear Mrs Coetzee Your letter dated 10 February 2014 refers: We hereby acknowledge receipt of your letter and comments in relation to the following project: Chubby Chick Rendering Facility (NWDEDECT Ref: NWP/EIA/62/2013; DEA Ref: 12/9/11/L1392/7; SMS Ref: FOU-POT-12-05-02). Your comments will be included in all subsequent reports for this project and will also be addressed in said reports. I further confirm that you have been registered as an Interested and Affected Party for this project. You will henceforth receive all correspondence regarding public participation opportunities as the process unfolds. Please do not hesitate to contact me should you have any queries.

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				the odours don't have a positive effect on the businesses and living quantity. I herewith request to be listed as an affected party and be informed of steps to be taken to resolve the odour problem. Your urgent attention and reply will be appreciated.	**Response from the applicant:** RE: CHUBBY CHICK RENDERING PLANT The letter received from MM Coetzee refers. We embarked on several projects to comply with environmental legislation. One of the projects is to upgrade the air scrubbing system with new technology. The present scrubber will be replaced with a bio-filter system. This filter system proved itself in other areas as very successful. A contract has been concluded and the replacement/upgrading must be concluded by the 10th of March 2014. We are confident that the up-grade will be beneficial to us as well as our neighbours.
Hellen Makwela	Department of Water and Sanitation	24-03-2014	Email	Good afternoon Lizette. Reference: Environmental Application for: Chubby Chick Rendering Facility: Water Use.	Good day Hellen The abstraction of water for use at the Chubby Chick Rendering Plant requires a Registration

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				Regarding the water use licence Application to be forwarded to the Department: DWA it is indicated the water uses in terms of the National Water Act, NWA 36 of 199 as section 21 (b), (c), (e), (f), (g) and (i) respectively but have however not indicate your requirement of the use of water that in this regard is Section 21 (a) of the same act. Kindly indicate whether the Section 21 (a) water use does or will not form part of your application, how and why? Hope you find the above in order.	of the Water Use, but falls under the General Authorisations. The 21(a) water use will, however, be discussed in the Water Use License application for this project. Please do not hesitate to contact me should you require any further information.
M.M. Coetzee	PlanServ Town & Regional Planning Services	05-05-2014	Email	Good day Lizette Thank you for the feedback. I take note of the contents of the letter and would like to inform you that the situation has indeed changed and we now rarely smell bad odours. We appreciate it. I would like to know if your client has already applied for a business permit / consent from the local authority to conduct the facility on the	Good day Madie Thank you for your email. I will forward your enquiry to the client and will notify you of the situation in terms of the consent from the local authority as soon as I receive feedback from the client. Your comments will also be included in subsequent reports for this project.

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				farm. I know this is not related to the EIA process but in terms of the Physical Planning Act as well as local policies, any land use other than farming that is conducted on agricultural land needs a permit.	
Hellen Makwela	Department of Water and Sanitation	11-06-2015	Email	RE: DRAFT SCOPING REPORT FOR EXPANSION OF THE CHUBBY CHICK RENDERING FACILITY ON THE FARM WILGEBOOM 458 IQ Reference is made to above mentioned report dated 27 May 2014. The Draft Scoping Report was reviewed for comments in accordance with applicable provisions in the National Water Act, 1998 (Act 36 of 1998) (NWA). 1. Page 25 of the report indicates that per day, approximately 55m^3 of wastewater is generated from the rendering process. The wastewater is currently flowing into the trenches and then pumped to an earth evaporation dam to the North east of the rendering facility. Kindly note that all wastewater pollution control dams should	**Initial Response** Good morning Hellen I hereby acknowledge receipt of your comments for the following project: Chubby Chick Rendering Facility project (NWDEDECT Ref: NWP/EIA/62/2013; DEA Ref: 12/9/11/L1392/7). **Second Response** Your letter dated 8 June 2015 refers. Herewith please find our formal response to the comments that you have raised. Firstly, please note that this Environmental Impact Assessment process is not for the *expansion* of the rendering facility in terms of its processing capacity, but for its *upgrading*

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				be lined, as part of the Water Use Licence Application (WULA) civil designs should be provided for the dams. 2. Page 25 of the report indicates that a separate French drain has been installed for handling of the sewage and grey water from the shower. Kindly note that the DWS does not permit the use of French drain however, it recommends that there be consideration of other disposal methods ensuring that the wastewater never gets into contact with clean groundwater. 3. Page 26 of the report indicates that the proposed changes require a water use license and registration, together with other water use activities, such as the storage of water, occurring at the facility. Kindly provide any registration once available together with WULA. 4. Indicates that the proposed activities include possible change to the existing earth evaporation dams. Kindly note that the DWS requires the applicant to ensure that the dam is adequately lined with a	and the construction of a new wastewater treatment works. 1. The earth wastewater evaporation dam will be lined with an appropriate liner as part of the proposed upgrades to the existing (inadequate) wastewater treatment system. 2. The applicant did consider the installation of a conservancy tank system, but as the rendering facility is situated in a rural location far from services, the costs associated with emptying a conservancy tank by way of a honeysucker/super sucker are too high to be a financially feasible option. 3. The Water Use Registration and Water Use Licence application documents will be submitted to the Department of Water and Sanitation as soon as they have been finalised. 4. The earth wastewater evaporation dam will be lined with an appropriate liner as part of the proposed upgrades to the

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				suitable liner to prevent groundwater pollution and the drawing designs must be submitted to the DWS for approval. The evaporation dam / pollution control dam must have at least 0.8m freeboard and must be able to cater for a 24 hour rainfall or 25 year rain event. 5. Page 30 of the report, Figure 7 shows a picture of the coal storage bunker, kindly take note that a proper storm-water management plan. Kindly note that a proper storm-water management measures should be put in place to ensure separation of clean and dirty water. Storm-water drainage systems must also be installed around all structures (roads, vehicle maintenance yard, secured storage area and parking bays) in order to effectively manage all contaminated storm-water management must be adhered to. Also note that the design plan should be submitted to the department for approval.	existing (inadequate) wastewater treatment system. Design drawings for the evaporation dam have not been compiled as yet and will be submitted to the Department for approval once finalised. 5. A Stormwater Management Plan has been compiled for the rendering facility. Please find the Stormwater Management Plan attached to this letter for your approval. 6. A Wetland Delineation and Functional Assessment was conducted by Limosella Consulting in February 2015. The study found that a hillside seep wetland is present on the property and that the rendering facility is 250m upslope from the wetland. A Water Use Licence application for Section 21(c) and (i) water uses will be submitted to the Department of Water and Sanitation once it has been finalised. Other water uses requiring registration and/or licensing will also form part of this application. A map showing the delineated

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				6. Page 58 of the report indicates that the majority of the site and property has been disturbed. Apart from the rendering facility, the property is used for crop production and is therefore in a disturbed stated. According to certain topographical maps, a drainage line may run to the west of the rendering facility and it is not known whether any wetland zones are present. The potential drainage line runs through an existing crop production field. Please note that no activity must take place within the 1:100 year flood line or the delineated riparian habitat, whichever is the greatest, or within 500m radius from the boundary of any wetland. Should there be any activity within the restricted area then such and activity is considered as a water use and a water use authorisation in terms of Section 21(c) and (i) of the NWA should be applied for in consultation with the Department. A clear, legible map must be submitted clearly indicating the 1:100 year flood line, or whichever is greater.	wetland in relation to the rendering facility is attached to this letter. Chubby Chick takes note of the requirement to notify the Department of any pollution incidents. As also mentioned previously, a Water Use Licence application and accompanying Integrated Water and Waste Management Plan will be submitted to the Department for all relevant water uses once the relevant application documents have been finalised by Shangoni. All mitigation measures proposed in the Environmental Impact Assessment and draft Environmental Management Programme reports will be implemented by Chubby Chick.

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				The Department must be notified in the event of any pollution of the water resource. Proper management measures must be employed towards the appropriate clean-up of the leaking or spilled substance and its proper disposal in an acceptable manner as required by Section 19 of the NWA. If any pollution incident is experienced, the DWS must be notified immediately (within 24 hours) as required in terms of Section 20 of the NWA. An applicant is required to apply a water use license in terms of Section 21 of the NWA for all water use activities that is taking place in a proposed and existing development. Furthermore the DWS would like to advise the pre-application consultation meeting to ensure that all potential water uses are identified and applied for. All commitments made within the Report aimed at decreasing the environmental impacts must be adhered to.	

Name	Company/ Department	Date received	Method of comment	Issue raised	Response
				Should you have any queries, please contact Ms H Makwela of this office (details indicated above and email below).	

4.3.9 Conclusions of the PPP

In conclusion, the Public Participation exercise has provided adequate information to enable an understanding of what the rendering facility project entails and to address the concerns and comments received during the Environmental Impact Assessment process thus far.

5. NEED AND DESIRABILITY FOR THE ACTIVITY

A need and desirability for this project is evident from the following perspectives:

5.1 Developer/Applicant

Licensing the rendering facility in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) and the National Water Act, 1998 (Act No. 36 of 1998) will mean that the facility will be one of only a few licensed rendering facilities, in terms of environmental legislation, in the area. This legal compliance will ensure that the rendering facility can operate for the foreseeable future, without the risk of prosecution for non-compliance to the law. This should also reduce the insurance liability of the facility, decreasing premiums for the applicant. Furthermore, having a licensed facility will result in a better reputation for Chubby Chick and their product, the high protein meal, will be considered superior to high protein meals produced at unlicensed facilities.

The upgrading of the current wastewater management system will ensure that wastewater (process water) generated at the rendering facility is treated effectively in a wastewater treatment works. The changes will ensure that wastewater generated at the facility no longer pollutes the environment. Potential upgrading of the current earth evaporation dam through the addition of a liner will also prevent soil-, surface water- and groundwater pollution. The above listed changes will ensure that the rendering facility operates in a more environmentally responsible manner and will decrease the reputational and legislative liabilities faced by the facility.

5.2 Local community

The unemployment rate for the Tlokwe City Council municipal area is almost 30% according to the 2011 census (Statistics South Africa, 2011). The rendering facility employs 25 people on a permanent basis and this ensures a constant income for up to 25 households. The continued, sustainable operation of the rendering facility will benefit the local community though the continued employment of 25 people. The rendering facility also stimulates other businesses, such as the transporters that collect boiler ash from the facility.

6. IDENTIFIED ALTERNATIVES

The following definition of "alternatives" is given in the EIA Regulations of 18 June 2010: "alternatives", in relation to the proposed activity, *means different means of meeting the general purpose and requirements of the activity, which may include alternatives to-*

a) the property on which or location where it is proposed to undertake the activity;
b) the type of activity to be undertaken;
c) the design or layout of the activity;
d) the technology to be used in the activity;
e) the operational aspects of the activity; and
f) the option of not implementing the activity".

Typically, alternative assessments are conducted to assist in comparing various projects or attributes of projects that will occur. The most critical comparison is evaluating any proposed project against the No-Go option. The alternatives assessment then considers alternatives to project site selection for the proposed development; alternatives to layout of the development; and alternatives to construction methodologies and/or materials used for the development.

The alternatives assessment was conducted using an analysis of each proposed alternative, through assessing various environmental attributes. These attributes can include physical (geology and soils, surface water quality and quantity, groundwater quality and quantity); biophysical (flora and fauna, sensitive environments); and social attributes (site of archaeological or cultural importance, land use issues, social health and welfare).

The impact of the each alternative was then evaluated in terms of whether it has a positive, negative, or no impact. In this instance, the impact is not evaluated in terms of significance but rather in terms of whether or not it will arise. Positive impacts are assigned a value of 1; no impact a value of 0; and a negative impact a value of -1.

By adding all of the attribute scores for each alternative, a suitability score is derived that indicates the preferred alternative. A total positive score indicates the project benefits outweigh the potential negative impacts, while a total negative score indicates the project environmental costs outweigh the potential benefits. Essentially, the highest scoring alternative is then carried forward for full impact evaluation.

6.1 No-Go option

The potential impact of the preferred project option on environmental and socio-economic attributes identified during the assessment phase is evaluated against the potential impact of the No-Go option on the same attributes. The summary of this assessment is provided in the table below.

Table 19: Development vs. No-Go option

Attribute	Development Option	No-go Option
Physical environment		
Air Pollution	-1	-1
Noise Pollution	-1	-1
Water Quality	1	-1
Water Quantity	-1	-1
Visual Aesthetics	-1	-1
Biophysical environment		
Fauna and Flora	0	-1
Sensitive Environments	0	-1
Social environment		
Traffic	0	0
Impact on property values	1	-1
Safety and security	0	0
Regional and local economy	1	1
Infrastructure development	1	0
Total	**0**	**-7**

As can be seen in the table above, the no-go option has an overall negative score whilst the development option has an overall score of zero. The following improvements will occur at the rendering facility as part of the development option and they balance out the current negative impacts of the operation of the rendering facility:

- An effective wastewater treatment works will be installed (improved quality of water irrigated or discharged into the environment and no negative impact on fauna, flora and sensitive environments);
- The existing earth, wastewater evaporation dam will be lined; and
- The rendering facility will be licensed in terms of the National Water Act, 1998 and has been licensed in terms of the National Environmental Management: Air Quality Act, 2008. Licensing entails the stipulation of various mitigation and management measures by the various competent authorities, all of which will result in the facility being managed in a more environmentally responsible manner.

The above mentioned improvements will decrease the environmental impact of the rendering facility (below current, No-Go Option levels).

6.2 Alternatives considered

The following alternatives were compared using a qualitative assessment.

6.2.1 Activity and process alternatives

The proposed activity is the construction of a new Wastewater Treatment Works; the upgrading of the existing wastewater treatment system through the lining of an existing earth evaporation dam and earth canals (where necessary); and the licensing of the rendering facility in terms of the National Water Act, 1998. An Atmospheric Emission Licence in terms of the National Environmental Management: Air Quality Act, 2004, has already been issued for the facility.

The current wastewater treatment system at the rendering facility is inefficient and entails the evaporation of untreated wastewater in an earth evaporation pond. The first process alternative that is being considered is the installation of an adequately designed process wastewater treatment works to treat the wastewater to a quality that complies with the Department of Water Affairs' General Limit standards for irrigation and/or discharge into a water resource. The second alternative, namely the lining of the existing earth evaporation dam, is also being considered. The earth evaporation dam constitutes a temporary wastewater storage facility for the rendering plant.

In terms of the treatment of wastewater, a number of treatment options can be considered. The most prevalent options are the use of chemical and biological treatment processes. Biological treatment systems entail the use of microorganism (bacteria) to degrade and decompose organic materials found in the wastewater. Chemical treatment systems rely on the addition of a variety of chemicals, such as coagulants and flocculants, to treat the wastewater.

Whilst a biological treatment process is a more natural process, it has a number of risks. Firstly, the bacterial required for the process are costly and supply from suppliers may become a liability should the supplier become unreliable. The balance or combination of the different bacterial strains required to effectively treat the wastewater is crucial and the risk exists that the balance will not be obtained and the resultant treatment will not be entirely effective. Finally, the bacteria require warm temperatures to thrive. In winter months where temperatures regularly drop to close to zero degrees Celsius during the night, conditions are not ideal for the growth and functioning of the bacteria and their treatment efficacy is compromised, leading to ineffectively treated wastewater. It is due to these disadvantages (and therefore risks) of biological treatment processes that the applicant is proposing a chemical treatment process to effectively treat the rendering facility wastewater instead of pursuing a biological treatment option. The proposed chemical treatment process is proven to be effective in the treatment of rendering facility wastewater.

In terms of the existing earth evaporation dam, two alternatives can be considered. The current earth evaporation dam can be lined with a suitable HDPE liner to prevent infiltration of treated wastewater into the soil and groundwater regime. The second alternative would be to construct a new treated wastewater storage facility for the storage of the treated wastewater prior to it being irrigated or discharged (when irrigation may not be possible). An option would be to construct a concrete sump for the containment of the treated wastewater. It is, however, more practical to rather line the existing earth evaporation dam as the dam is already present and no further earthworks would be required, as would be the case for the construction of a sump. The lining of the existing earth evaporation dam could also be cheaper than the construction of a concrete sump. Finally, the construction of a concrete sump would entail further disturbance and destruction of vegetation onsite and this is not preferable. In conclusion, the lining of the earth evaporation dam is the preferred alternative in terms of the upgrading of the wastewater treatment system and is therefore also the route which the applicant is proposing to follow.

6.2.2 Location alternatives

As this project entails the licensing of an existing, operational rendering facility, no location alternatives can be considered for the rendering facility itself, nor for the construction of the new Wastewater Treatment Works. The location of the rendering facility is on Portion 198 of the farm Wilgeboom 458 IQ.

6.2.3 Site layout alternatives

As this project entails the licensing of an existing, operational rendering facility, no site layout alternatives can be considered for the rendering facility itself. In terms of the construction of the new Wastewater Treatment Works, it is practical for the works to be constructed as close as possible to the rendering facility due to the following reasons:

- Siting the Wastewater Treatment Works close to the rendering facility minimises the distance of piping and consequently also the amount of electricity required to pump wastewater through the treatment system; and
- Siting the Wastewater Treatment Works close to the rendering facility minimises the size of the area that needs to be disturbed and/or destroyed to construct the works. Siting the works further away from the rendering facility would entail the disturbance of vegetation to gain access to the treatment works.

Due to the above, it is proposed to construct the Wastewater Treatment Works immediately to the North-west of the rendering facility and no other site layout alternatives have been proposed.

7. ENVIRONMENTAL IMPACT ASSESSMENT

7.1 Aims of Environmental Impact Assessment

Potential environmental impacts (biophysical) associated with the proposed upgrade of the Chubby Chick Rendering Facility have been identified. The Environmental Impact Assessment (EIA) phase aims to adequately investigate and address all potentially significant environmental issues in order to provide the North-West Department of Rural, Environmental and Agricultural Development with sufficient information to make an informed decision regarding the proposed project.

This part of the document thus focuses on the identification of the major potential impacts the activities, processes and actions may have on the surrounding environment. It indicates the major impacts that these activities may have on the environmental components associated with the site, as required in terms of R.543 of the EIA Regulations, 2010.

The EIA aims to achieve the following:

- To provide a detailed assessment of the biophysical environments affected by the proposed project;
- To assess impacts on the study area in terms of environmental criteria; and
- To identify and recommend appropriate mitigation measures for potentially significant environmental impacts.

This EIR addresses the following:

- A detailed description of the proposed project;
- Detailed assessment of the impacts identified which are determined to be potentially significant;
- Recommendations regarding the mitigation of significant impacts; and
- To meet the requirements and to comply with the necessary legislation and Acts.

Any specialist studies are combined into this consolidated report to allow for easy assessment of the potential aspects with associated impacts.

7.2 Environmental Impact Assessment Procedure

The environmental risk of any aspect is determined by a combination of parameters associated with the impact. Each parameter connects the physical characteristics of an impact to a quantifiable value to rate the environmental risk.

Impact assessments should be conducted based on a methodology that includes the following:

- Clear processes for impact identification, predication and evaluation;
- Specification of the impact identification techniques;

- Criteria to evaluate the significance of impacts;
- Design of mitigation measures to lessen impacts;
- Definition of the different types of impacts (indirect, direct or cumulative); and
- Specification of uncertainties.

After all impacts have been identified, the nature of each impact can be predicted. The impact prediction will take into account physical, biological, socio-economic and cultural information and will then estimate the likely parameters and characteristics of the impacts. The impact prediction will aim to provide a basis from which the significance of each impact can be determined and appropriate mitigation measures can be developed.

The risk assessment methodology is based on defining and understanding the three basic components of the risk, i.e. the source of the risk, the pathway and the target that experiences the risk (receptor). Refer to the figure below for a model representing the above principle (as contained in the DWA's Best Practice Guideline: G4 – Impact Prediction).

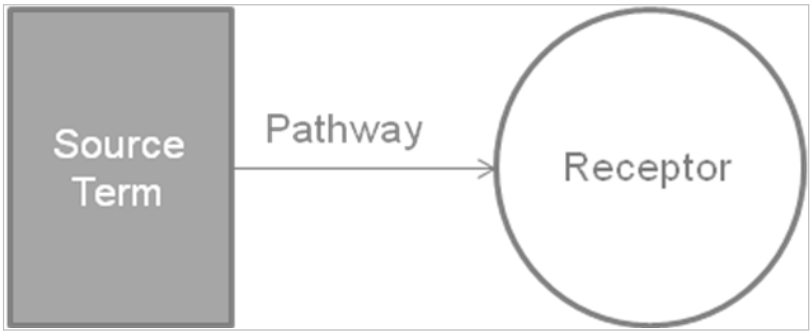

Figure 58: DWA's model for impact prediction (risk assessments)

Table 20 and Table 21 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 22 provides the Risk Matrix that will be used to plot the Probability against the Magnitude in order to determine the Severity of the impact.

Table 20: Determination of Probability of Impact

Frequency of Aspect / Unwanted Event	Score	Availability of pathway from the source to the receptor	Score	Availability of receptor	Score
Never known to have happened, but may happen	1	A pathway to allow for the impact to occur is never available	1	The receptor is never available	1
Known to happen in industry	2	A pathway to allow for the impact to occur is almost never available	2	The receptor is almost never available	2
< once a year	3	A pathway to allow for the impact to occur is sometimes available	3	The receptor is sometimes available	3
Once per year to up to once per month	4	A pathway to allow for the impact to occur is almost always available	4	The receptor is almost always available	4

Frequency of Aspect / Unwanted Event	Score	Availability of pathway from the source to the receptor	Score	Availability of receptor	Score
Once a month - Continuous	5	A pathway to allow for the impact to occur is always available	5	The receptor is always available	5

Step 1: Determine the **PROBABILITY** of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor.

Table 21: Determination of Magnitude of Impact

Source								Receptor			
Duration of impact	**Score**	**Extent**	**Score**	**Volume / Quantity / Intensity**	**Score**	**Toxicity / Destruction Effect**	**Score**	**Reversibility**	**Score**	**Sensitivity of environmental component**	**Score**
Lasting days to a month	1	Effect limited to the site. (metres);	1	Very small quantities / volumes / intensity (e.g. < 50L or < 1Ha)	1	Non-toxic (e.g. water) / Very low potential to create damage or destruction to the environment	1	Bio-physical and/or social functions and/or processes will remain unaltered.	1	Current environmental component(s) are largely disturbed from the natural state. Receptor of low significance / sensitivity	1
Lasting 1 month to 1 year	2	Effect limited to the activity and its immediate surroundings. (tens of metres)	2	Small quantities / volumes / intensity (e.g. 50L to 210L or 1Ha to 5Ha)	2	Slightly toxic / Harmful (e.g. diluted brine) / Low potential to create damage or destruction to the environment	2	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	2	Current environmental component(s) are moderately disturbed from the natural state. No environmentally sensitive components.	2
Lasting 1 – 5 years	3	Impacts on extended area beyond site boundary (hundreds of metres)	3	Moderate quantities / volumes / intensity (e.g. > 210 L < 5000L or 5 – 8Ha)	3	Moderately toxic (e.g. slimes) Potential to create damage or destruction to the environment	3	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	3	Current environmental component(s) are a mix of disturbed and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).	3
Lasting 5 years to Life of Organisation	4	Impact on local scale / adjacent sites (km's)	4	Very large quantities / volumes / intensity (e.g. 5000 L – 10 000L or 8Ha– 12Ha)	4	Toxic (e.g. diesel & Sodium Hydroxide)	4	Bio-physical and/or social functions and/or processes might be considerably altered or enhanced / potentially irreversible	4	Current environmental component(s) are in a natural state. Environmentally sensitive environment / receptor (endangered species / habitats etc.).	4
Beyond life of Organisation / Permanent impacts	5	Extends widely (nationally or globally)	5	Very large quantities / volumes / intensity (e.g. > 10 000 L or > 12Ha)	5	Highly toxic (e.g. arsenic or TCE)	5	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	5	Current environmental component(s) are in a pristine natural state. Highly Sensitive area (endangered species, wetlands, protected habitats etc.)	5

Step 2: Determine the **MAGNITUDE** of the impact by calculating the average of the factors above.

Table 22: Determination of Severity of impact

ENVIRONMENTAL IMPACT RATING / PRIORITY					
	MAGNITUDE				
PROBABILITY	**1 Minor**	**2 Low**	**3 Medium**	**4 High**	**5 Major**
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium

Step 3: Determine the **SEVERITY** of the impact by plotting the averages that were obtained above for Probability and Magnitude in the table below.

7.3 Description of Environmental Impacts

The aim of this section of this EIA report is to provide information regarding the potential environmental impacts associated with the proposed activities. In order to provide background information and a framework for the environmental risk assessment, a description of the different phases of the project is provided below. Refer to the tables below for the impacts associated with the Chubby Chick Rendering Facility project.

Planning and Design Phase

- The following impacts can be expected if proper environmental management plans are not developed and implemented:
  - Soil-, surface water- and groundwater pollution;
  - Generation of noise and subsequent nuisance to nearby landowners;
  - Generation of atmospheric emissions, dust and odours and subsequent nuisance to nearby landowners;
  - Loss or disturbance of vegetation;
  - Loss of topsoil;
  - Soil erosion;
  - Disturbance of a wetland; and
  - Contamination of surface water runoff.
- Soil, surface water and groundwater pollution during the operational phase due to inadequate design of the wastewater treatment works;
- Soil, surface water and groundwater pollution, as well as nuisance caused by odours and unsightly appearance of waste onsite, due to inadequate design of waste storage facilities and/or areas;
- Degradation and loss of a valuable resource (topsoil) through increased runoff as stormwater flows over cleared, bare areas during rainfall events, due to poor scheduling of construction activities;

- Generation of noise and nuisance to neighbours as a result of construction activities occurring during inconvenient times of the day; and
- Generation of atmospheric emissions, odours and nuisance to neighbours during the operational phase, due to inadequate design of the air treatment system (odour abatement system).

Construction Phase

- Harm to the environment in general (this can include pollution of soil and water resources, as well as harm to employees and wasteful practices in terms of resource use and waste management);
- Removal of indigenous vegetation during the construction phase;
- Disturbance or destruction of vegetation surrounding the site as a result of runaway veld fires caused by workers or contractors;
- Introduction of alien invasive plants that can impact on the hydrology and outcompete natural vegetation. Alien and invasive plant species also generally use more water than indigenous plants;
- The construction activities associated with the proposed new wastewater treatment system and upgrading the existing wastewater treatment system may disturb or destroy areas of the wetlands onsite;
- Degradation and loss of a valuable resource (topsoil);
- Erosion of cleared areas;
- Soil and surface water pollution as a result of the spillage, improper handling, storage, mixing or disposal of cement and concrete;
- Soil and surface water pollution through contaminated wash water runoff;
- Soil, surface water and groundwater pollution due to poor waste management as well as nuisance caused by odours and unsightly appearance of waste onsite;
- Soil, surface water and groundwater pollution from unsanitary conditions onsite;
- Soil, surface water and groundwater pollution as a result of poor management and accidental spills of hazardous chemical substances used onsite;
- Hydrocarbon pollution of soil, surface water and groundwater through the spilling of fuel, grease or oil or leaking equipment and vehicles;
- Ambient air quality degradation as well as disturbance and nuisance to neighbours and other sensitive receptors due to dust generation;
- Noise pollution and nuisance to neighbours;
- Wear of access roads, accidents on access roads, unpermitted transport of materials and loss of materials being transported on access roads;
- Wastage or depletion of a valuable resource (groundwater) due to inefficient or redundant usage;
- Loss of artefacts or sites protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

Operational Phase

- Harm to the environment in general (this includes pollution of soil and water resources, as well as harm to employees and wasteful practices in terms of resource use and waste management);
- Growth of alien and invasive vegetation leading to smaller habitat areas available for indigenous vegetation. Alien and invasive plant species also generally use more water than indigenous plants;
- Loss of indigenous grassland and habitats for indigenous fauna species surrounding the site as a result of runaway veld fires;
- The discharge and/or spillage of ineffectively treated wastewater into the environment can lead to further degradation of the wetland;
- Soil, surface water and groundwater pollution as well as nuisance caused by odours and unsightly appearance of waste onsite as a result of poor waste management (waste generated at the facility and not including incoming waste from the abattoirs for processing at the rendering facility);
- Soil, surface water and groundwater pollution as well as nuisance caused by odours and unsightly appearance of waste onsite as a result of poor management of incoming waste from the abattoirs (waste to be processed at the rendering facility);
- Soil, surface water and groundwater pollution from unsanitary conditions onsite;
- Soil, surface water and groundwater pollution as a result of poor management and accidental spillage of hazardous chemical substances used onsite;
- Soil, surface water and groundwater pollution through spillage of fuel, grease or oil and leaking equipment and vehicles;
- Soil, surface water and groundwater pollution due to the accidental discharge of ineffectively treated wastewater into the environment;
- Soil, surface water and groundwater pollution due to poor handling and storage of coal;
- Soil, surface and groundwater pollution as a result of poor ash management;
- Soil and surface water pollution due to the contamination of ‘clean’ stormwater in ‘dirty’ areas;
- Ambient air quality degradation as well as disturbance and nuisance to neighbours and other sensitive receptors due to dust generated from onsite traffic;
- Noise disturbance and nuisance to neighbours and other sensitive receptors due to operational activities;
- Disturbance and nuisance to neighbours and other sensitive receptors due to offensive odours generated at the rendering facility;
- Ambient air quality degradation through combustion emissions from boilers;
- Wear of access roads, accidents on access roads, unpermitted transport of materials and loss of materials being transported on access roads;
- Wastage or depletion of valuable resources (groundwater and electricity) due to inefficient or redundant usage;
- Outbreak of diseases and possible infection of workers at the facility; and
- Loss of artefacts or sites protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

Rehabilitation Phase

- Ineffective rehabilitation, including soil erosion and generation of dust; and
- Bare areas leading to soil erosion and generation of dust as a result of ineffective establishment and growth of vegetation planted during rehabilitation of disturbed areas.

Decommissioning and Closure Phase

Closure and decommissioning of the rendering facility and its wastewater treatment works is not anticipated for the foreseeable future. Should the facility close, a detailed closure and rehabilitation plan will be submitted to the North West Department of Rural, Environmental and Agricultural Development prior to decommissioning.

7.3.1 Impacts associated with the operation of the Chubby Chick rendering facility and the construction and operation of its proposed wastewater treatment works

Table 23: Environmental impact assessment: Environment in general

Activity:

- Identification and development of management plans.
- Construction activities associated with the proposed new wastewater treatment system and upgrading the existing wastewater treatment system.
- Operational activities at the rendering facility and wastewater treatment works.

Aspect:

- Inadequate and/or impractical management plans.
- Lack of knowledge amongst workers and contractors in terms of how their actions may impact on the environment.
- Unauthorised access to the site.

Nature and significance of environmental impact

Project Phase Applicability		
	Planning and Design Phase	X
	Construction	X
	Operation	X
	Decommissioning	

Impact Description	Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents
	Probability	Magnitude	Severity					Probability	Magnitude	Severity	
The following impacts can be expected if proper environmental management plans are not developed and implemented: • Soil-, surface water- and groundwater pollution; • Generation of noise and subsequent nuisance to nearby landowners; • Generation of atmospheric emissions, dust and odours and subsequent nuisance to nearby landowners; • Loss or disturbance of vegetation; • Loss of topsoil; • Soil erosion; • Disturbance of a wetland; and • Contamination of surface water runoff.	3	3	M	These plans should describe reasonable measures to be implemented by Chubby Chick to avoid, minimise or mitigate environmental impacts.	The following Environmental Management Plans should be developed and implemented by Chubby Chick: • An environmental awareness plan. • Construction contractor's plan indicating the locations of construction infrastructure including the site-camp, paint or cement cleaning pits, toilets, stores, stockpiles (topsoil and building rubble) and site office. • An eradication plan for the removal of the alien and invasive vegetation (for construction and operational phases). • An Emergency Preparedness Plan in accordance with GNR. 926 of 29 November 2013. • A dangerous goods management plan based on the material safety data sheets (MSDSs) of all identified chemical substances and the 1995 Hazardous Chemical Substances Regulations in terms of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). • A monitoring programme for the wetland and watercourses. • A waste management plan/procedure. • A storm water management plan; and • An odour management plan.	Complete prior to start of construction phase.	• Chubby Chick • Construction contractor • Environmental consultants	2	2	L	• NEMA, 1998 • NEMWA, 2008 • NWA, 1998 • NEM:AQA, 2004 • CARA, 1983 • National Veld and Forest Fire Act, 1998 • OHSA, 1993
Harm to the environment in general (this includes pollution of soil and water resources, as well as harm to employees and wasteful practices in terms of resource use and waste management).	3	3	M	To prevent harm to the environment by educating workers and contractors.	• The contractor is to ensure that all employees, including sub-contractors and their employees, attend onsite Environmental Awareness/Training prior to commencing work on site. • Follow-up Environmental Awareness/Training may be required from time to time as new subcontractors or crews commence work or for specific activities that may potentially impact the environment. • The contractor is to maintain accurate records of any training undertaken. • The ECO shall monitor the contractor's compliance with the requirement to provide sufficient environmental awareness training to all site staff.	During the construction and operational phases.	• Facility Manager • ECO	2	2	L	• NEMA, 1998 • NEMWA, 2008 • OHSA, 1993

					• All construction workers shall be issued with ID badges and clearly identifiable uniforms. • Training is to cover all aspects of the EMP and procedures to be followed. • All employees are required to attend onsite Environmental Awareness/Training prior to commencing work on site. • Follow-up Environmental Awareness/Training may be required from time to time as new employees commence work or for specific activities that may potentially impact the environment. • The facility manager is to maintain accurate records of any training undertaken.						

Table 24: Environmental impact assessment: Fauna and Flora (Critical Biodiversity Area 2)

Activity:
- Construction activities associated with the proposed new wastewater treatment system and upgrading of the existing wastewater treatment system.
- Hot work activities, smoking and cooking as part of the construction phase.
- Replacement of vegetation.
- Growth of alien and invasive vegetation on site.

Aspect:
- Site clearance – removal of vegetation.
- Runaway veld fires caused by workers or contractors.
- Ineffective establishment and growth of vegetation planted during rehabilitation of disturbed areas.
- Infestation of alien invasive vegetation.

Nature and significance of environmental impact

Project Phase Applicability		
	Planning and Design Phase	
	Construction	X
	Operation	X
	Decommissioning	

Impact Description	Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents
	Probability	Magnitude	Severity					Probability	Magnitude	Severity	
Removal of indigenous vegetation outside of the construction footprint of the wastewater treatment works. The development footprint for the new wastewater treatment works will only be ±120m^2. The majority of the property is cultivated land and the vegetation in the vicinity of the rendering facility is mostly in a disturbed state.	3	2	M	To prevent the disturbance and loss of indigenous vegetation.	• Before any construction takes place the proposed area for the proposed new wastewater treatment works will be pegged out. All construction activities will be limited to within these areas in order to reduce the footprint disturbed and avoid impact on adjacent grasslands and wetland. • Construction areas should be fenced off or barricaded prior to and during construction. • Site clearance is to be limited to only the area necessary for carrying out the specified work. • The site boundary is to be clearly demarcated and screened from the commencement of works. • All demarcation is to be regularly maintained. • No unauthorised entry, stockpiling, dumping or storage of equipment outside the site boundary is permitted. • All construction activities are to be restricted within the site boundary.	During construction phase, up until operation of the facility.	• Construction contractor • Facility Manager • ECO	2	2	L	• NEMA, 1998 • NWA, 1998

					• Removal of vegetation is to be avoided until such time as soil stripping is required. • Cleared indigenous vegetation can be stockpiled for possible reuse in later rehabilitation or landscaping or as a brush pack for erosion prevention. • Once the construction activities have been completed, the remaining disturbed area must be top-soiled, sloped and re-vegetated as soon as possible using indigenous grass species. • Exotic and invasive plant species should be eradicated as part of the construction phase as far as possible. • Compacted soil should be ripped to ensure effective re-vegetation. • Soil stabilising measures could include rotovating in straw bales (at a rate of 1 bale/20m²), applying mulching or brush packing or creating windbreaks using brush or bales, where required.						
Loss of indigenous grassland and habitat for indigenous fauna species surrounding the site as a result of runaway veld fires.	3	3	M	To prevent the occurrence and spreading of a veld fire.	**Equipment** • Basic fire-fighting equipment is to be placed at strategic locations on site and must be readily available. • Equipment is to be maintained in good working order to the satisfaction of local fire authorities. • All personnel handling fuels and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE). **Signage** • Safety signage including “No Smoking”, “No Naked Lights” and “Danger”, and product identification signs, are to be clearly displayed on fuel storage facilities and tanks. • Emergency numbers are to be clearly displayed. **Training** • An emergency procedure, taking into consideration all potential emergencies, such as a fire outbreak, hazardous chemical spill, etc. should be compiled. • It must be ensured that all employees, including sub-contractors and their employees, are trained on the emergency procedure. • Follow-up emergency training may be required from time to time as new subcontractors, crews and/or employees commence work. • The contractor/facility manager is to maintain accurate records of any emergency training undertaken. • The ECO shall monitor compliance with the requirement to provide sufficient emergency training to all site staff. **Activities** • All construction workers shall be transported to and from site on a daily basis. • Workers shall remain on the site at all times during the work day and no one will be allowed to leave site by foot, not even during break times. • Cooking during lunch is to be restricted to bottled gas facilities in designated areas approved by the ECO. This facility is to be supervised and strictly controlled. • A dedicated braai facility may be permitted in an area approved by the ECO, if it is in close proximity to firefighting equipment. At no time is a braai fire to be left unattended.	During the construction and operational phases.	• Contractor • Facility Manager • ECO	1	3	L	• NEMA, 1998 • National Veld and Forest Fire Act, 1998

					• Smoking is prohibited near places where any readily combustible or flammable materials are present. Notices are to be prominently displayed prohibiting smoking in such areas. • Welding, flame cutting and other hot work is only to be undertaken in places where the necessary safety precautions are in place (i.e. not near potential sources of combustion and with a fire extinguisher immediately accessible). • If applicable, night watchmen are to be provided with adequate cooking and heating facilities (no open fires), a suitable method of disposing of wastewater and access to communication equipment. • No open fires are permitted. **Flammable materials** • Flammable materials storage must comply with standard fire safety regulations. • All flammable materials are to be stored in a suitable, lockable storage area. • Combustible materials may not accumulate on the site. • Access to fuel and chemical stores should be strictly controlled. • Stockpiles of vegetation are only to be located in areas approved by the facility manager and may not exceed 2m in height. Methods of stacking must take cognisance of the possible creation of a fire hazard. • Burning of stockpiled vegetation is not permitted. **General** • A fire break must be created on the inside boundary fence around the property. The fire break must be regularly maintained (kept clear of vegetation). • Should the fire break be burnt, the provisions in terms of the National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) must be complied with.						
Bare areas leading to soil erosion and generation of dust.	3	2	M	To ensure effective establishment and growth of vegetation.	• Re-vegetation by indigenous grass species. • Re-vegetated areas should continuously be monitored to verify whether the vegetation is growing and covering bare areas. • If areas show no specific vegetation growth within three months, areas shall receive additional topsoil, ripped to a depth of 100mm and re-planted. • Fertilisers can also be used to promote growth of vegetation.	Before completion of construction phase.	• Construction contractor. • ECO.	2	1	L	• NEMA, 1998 • CARA, 1983 • National Veld and Forest Fire Act, 1998
The disturbance due to construction and earth works will create a window of opportunity for invasions by alien invasive plants. Invasion of alien plants can impact on the hydrology and outcompete natural vegetation. Growth of alien and invasive vegetation could also lead to smaller habitat areas available for indigenous vegetation. Alien and invasive plant species also generally use more water than indigenous plants.	3	3	M	To control and eradicate alien and invasive plant species.	• Ensure all alien and invasive plants are identified on the site. • Ensure an eradication plan for the removal of the alien and invasive vegetation is developed. • Ensure all alien and invasive vegetation is removed from the site in accordance with the eradication plan. • Alien invasive vegetation must be eradicated and controlled by manual removal, chemical application and/or biological control. The regulations in terms of the Conservation of Agricultural Resource Act, 1983 apply.	Life of operation	Facility Manager	2	2	L	• NEMA, 1998 • NWA, 1998 • CARA, 1983

Table 25: Environmental impact assessment: Sensitive landscapes - Wetlands

Activity: • Site clearance and construction activities associated with the proposed new wastewater treatment works and upgrading of the existing wastewater treatment system. This includes earthwork activities, clearing of vegetation, disturbance of the soil surface, disturbance of slopes through the creation of roads and tracks and changes in runoff characteristics. • The alterations to the surface characteristics of the site for the purpose of constructing a new wastewater treatment works. • Irrigation of treated wastewater or its discharge into the environment.
Aspect:

- Site clearance beyond the development footprint and construction activities in the vicinity of a wetland. The loss of fringing vegetation and erosion as well as the alteration of natural fire regimes.
- Changes to the water flow regime, increasing peak flows and decreased flood attenuation.
- Overflow of the earth evaporation dam.
- Leaching of nutrients and contaminants from the earth evaporation dam and trenches/earthen canals into the groundwater that would then enter the wetland and Wilgeboomspruit.
- Inefficient treatment of wastewater.

Nature and significance of environmental impact														
Project Phase Applicability	Planning and Design Phase													
	Construction	X												
	Operation	X												
	Decommissioning													
Impact Description		Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents		
		Probability	Magnitude	Severity					Probability	Magnitude	Severity			
The construction activities associated with the proposed new wastewater treatment works and upgrading the existing wastewater treatment system may disturb or destroy areas of the wetland. The construction activities may change the amount of sediment entering the water resource and result in changes to turbidity. The construction activities may change the physical structure within the water resource (habitat). The rendering facility is situated 250m upslope from the hillside seep wetland delineated on the project property. The wetland is in a largely modified state.		3	3	M	To prevent disturbance and degradation of the wetland.	• No construction activities may take place within any of the wetland or wetland buffer areas. • No infrastructure may be placed or erected in the wetland or wetland buffer area. • Before any construction takes place the proposed area for the proposed new wastewater treatment system will be pegged out. All construction activities will be limited to within these areas in order to reduce the footprint disturbed and avoid impact on the wetland. • Construction areas should be fenced off or barricaded prior to and during construction. • Site clearing is to be limited to only the area necessary for carrying out the specified work. • No entry, stockpiling, dumping or storage of equipment is allowed within the wetland or wetland buffer. • The rendering facility must obtain a Water Use License in terms of the National Water Act (NWA), 1998 (Act No. 36 of 1998). • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area (DWAF, 2005). • A vegetation rehabilitation plan should be implemented. Grassland can be removed as sods and stored within transformed vegetation. The sods must preferably be removed during the winter months and be replanted by latest springtime. The sods should not be stacked on top of each other or within sensitive environs. Once construction is completed, these sods should be used to rehabilitate the disturbed areas from where they have been removed. In the absence of timely rainfall, the sods should be watered well after planting and at least twice more over the next 2 weeks. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.	During construction phase, up until operation of the facility.	• Construction Contractor • Facility Manager • ECO	2	2	L	• NEMA, 1998 • NWA, 1998	

					• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. • Runoff from roads must be managed to avoid erosion and pollution problems. • Implement source-directed controls. • Maintain buffer zones to trap sediments. • Implement active rehabilitation. • Implement weed control. • Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. • Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.						
The discharge and/or spillage of ineffectively treated wastewater into the environment can lead to further degradation of the hillside seep wetland. The wetland is in a largely modified state.	3	3	M	To prevent disturbance and degradation of the wetland.	• Wastewater generated at the rendering facility must be treated to a quality that complies with the Department of Water Affairs' General Limit standards for discharge into a water resource or irrigation of crops. Only treated wastewater of this quality may be discharged into the environment or irrigated. • The quality of the treated wastewater being discharged into the environment or irrigated must be monitored on a monthly basis. • Surface water quality monitoring must also be conducted on a monthly basis at a number of locations upstream and downstream of the rendering facility. • A monitoring programme for the wetland and watercourses must be implemented. • Operational activities must occur outside of the wetland. No entry, stockpiling, dumping or storage of equipment or other material is allowed within the wetland or wetland buffer.	Life of operation	Facility Manager	1	3	L	• NEMA, 1998 • NWA, 1998

Table 26: Environmental impact assessment: Topsoil and erosion

Activity: • Scheduling for the construction phase of the proposed project. • Site clearance. • Stockpiling of topsoil and cleared vegetation. • Landscaping, replacement and levelling of subsoil and topsoil. • Replacement of topsoil and re-vegetation. • Vegetation establishment as part of the rehabilitation.			
Aspect: • Construction activities scheduled during summer months (raining season). • Prolonged exposure of cleared areas. • Topsoil being exposed to the elements. • Incorrect replacement and levelling of subsoil and topsoil. • Poor topsoil replacement and establishment of vegetation. • Unsatisfactory establishment of vegetation.			
Nature and significance of environmental impact			
Project Phase Applicability	**Planning and Design Phase**	**X**	
	Construction	**X**	
	Operation	**X**	
	Decommissioning		

Impact Description	Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents
	Probability	Magnitude	Severity					Probability	Magnitude	Severity	
Degradation and loss of a valuable resource (topsoil) through increased runoff as stormwater flows over cleared, bare areas during rainfall events.	3	3	M	To reduce the duration and extent of exposure of topsoil to preserve it as a resource and protect it from erosion.	• If possible, schedule construction activities for dry months (winter).	Complete prior to start of construction phase.	• Construction contractor • Chubby Chick	2	1	L	• NEMA, 1998
Degradation and loss of a valuable resource (topsoil). Changes in water flow regime due to the alteration of surface characteristics (the compaction of soil, the removal of vegetation, surface water redirection and the construction of infrastructure) is likely to increased peak flows and decrease flood attenuation. As the soils are highly susceptible to erosion it is likely that storm water discharge would result in erosion gullies and the loss of topsoil.	3	2	M	To reduce the duration and extent of exposure of topsoil to preserve it as a resource and protect it from erosion.	• Topsoil (top 150mm) is to be stockpiled in discrete areas and retained for future landscaping efforts. • Any sub-soil or rocks removed should also be stockpiled separately and be used during the rehabilitation phase. • Cleared indigenous vegetation should be used as a brush pack on topsoil stockpiles for erosion prevention. • Minimise the length and steepness of slopes. • If sterilisation of the topsoil has occurred during stockpiling, fertilisers may be used to supplement the soils before seeding of the area takes place. • Replace topsoil concurrent with construction, whenever possible. • Cordon off areas under rehabilitation using danger tape. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. • Aim to replace stockpiled topsoil to its original depth. • Topsoil should be returned to the same area from where it was stripped. • If there is not enough topsoil available from a particular soil zone, topsoil of a similar quality may be used to replace it. The suitability of substitute topsoil will be determined by a soil analysis and approved by the ECO. • Compacted soil should be ripped to ensure effective re-vegetation. • Re-vegetation by indigenous grass species. • If areas show no specific vegetation growth within three months, areas shall receive additional topsoil, ripped to a depth of 100mm and re-planted. • Soil stabilising measures could include rotovating in straw bales (at a rate of 1 bale/20m²), applying mulching or brush packing, or creating windbreaks using brush or bales.	During construction phase, up until operation of the facility.	• Construction contractor • ECO	1	2	L	• NEMA, 1998
Erosion of cleared areas. Changes in water flow regime due to the alteration of surface characteristics (the compaction of soil, the removal of vegetation, surface water redirection, the construction of infrastructure) is likely to increased peak flows and decrease flood attenuation. As the soils are highly susceptible to erosion it is likely that storm water discharge would result in erosion gullies and the loss of topsoil.	3	2	M	To minimise the duration of exposure of cleared areas and to limit erosion of subsoil.	• The contractor is to ensure that all reasonable measures are taken to limit erosion during the construction phase. Erosion protection measures include sand bags, cut-off drains and/or berms. • Placement of erosion prevention structures such as cement, rock or vegetation (grass) to reduce water velocity at concentration points within the drainage system, if required. • Cleared indigenous vegetation can be stockpiled for possible reuse in later rehabilitation or landscaping, or as a brush pack for erosion prevention. • Removal of vegetation is to be avoided until such time as soil stripping is required.	During construction phase, up until operation of the facility.	• Construction contractor. • ECO	2	2	L	• NEMA, 1998
Ineffective rehabilitation causing soil erosion and the generation of dust.	3	3	M	To ensure proper replacement of subsoil and topsoil to promote	• Replacement and rehabilitation should be progressive during the project and not left until the end. • Implementation of effective and sustainable rehabilitation and remediation practices.	Before completion of construction phase.	• Construction contractor. • ECO.	2	2	L	• NEMA, 1998

				effective rehabilitation of disturbed areas.	• Cordon off areas under rehabilitation using danger tape. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. • Disturbed areas must be cleared of any building rubble or other debris. • All weeds must be removed prior to soil replacement. • Subsoil must be used to fill in excavations around the rendering facility and associated infrastructure. • The disturbed area must be top-soiled, sloped and re-vegetated as soon as possible using indigenous grass species. • If sterilisation of the topsoil has occurred during stockpiling, fertilisers may be used to supplement the soils before seeding of the area takes place. • Aim to replace stockpiled topsoil to its original depth. • Topsoil should be returned to the same area from where it was stripped. • If there is not enough topsoil available from a particular soil zone, topsoil of a similar quality may be used to replace it. The suitability of substitute topsoil will be determined by a soil analysis and approved by the ECO. • Compaction must be minimised by using the correct equipment. Excessively heavy vehicles should not be used to replace the soil. A dozer must be used instead of a grader. • Compacted soil should be ripped to ensure effective re-vegetation. • Soils should ideally only be moved when dry. • Soil stabilising measures could include rotovating in straw bales (at a rate of 1 bale/20m²), applying mulching or brush packing or creating windbreaks using brush or bales.						

Table 27: Environmental impact assessment: Soil, surface water, stormwater and groundwater pollution

Activity: • Design of the wastewater treatment works. • The handling, storage, mixing and disposal of cement and concrete. • The cleaning of equipment and construction areas. • Handling, storage and disposal of general/domestic and hazardous waste. • Installation and use of ablution facilities. • Storage and handling of hazardous chemical substances, fuels, greases and oils. Vehicle and equipment maintenance and refuelling. • Design of waste storage facilities and/or areas. • Handling, storage and processing of incoming waste from abattoirs. • Generation and treatment of wastewater. • Handling and storage of coal. • The burning of coal in the boilers to generate steam. • Rain events and rain water (stormwater) flowing through the site.
Aspect: • Inadequate design of the wastewater treatment works. • Concrete and cement spillage. • Generation and runoff of contaminated wash water. • Poor waste management. • Unsanitary conditions on site. • Poor management and spills of hazardous chemical substances, fuel, greases and oils. Leaking equipment or vehicles and/or spillage of fuels, greases and oils. • Inadequate design of waste storage facilities and/or areas. • Poor management of incoming waste from the abattoirs. • Inefficient management and treatment of wastewater generated at the rendering facility.

- Poor management and spillage of coal.
- Generation of boiler ash.
- 'Clean' rainwater (stormwater) running into 'dirty' areas.

Nature and significance of environmental impact														
Project Phase Applicability	Planning and Design Phase	X												
	Construction	X												
	Operation	X												
	Decommissioning													
Impact Description			Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents	
			Probability	Magnitude	Severity					Probability	Magnitude	Severity		
Soil, surface water and groundwater pollution during the operational phase due to inadequate design of the wastewater treatment works. A concern is for the evaporation dam and drains and the possible contamination of the groundwater and any possible aquifers. Near to the dam and drains the soil is sandy in texture with a clay content of approximately 20%. This suggests that the potential for leaching is high. Due to the low clay content there would be a possibility for contaminants or nutrients to leach into the groundwater and the potential for adsorption onto the clay colloids would be low. A soft plinthic B horizon was noted at a depth of 1m indicating that the water table is fluctuating at this depth.		3	4	H	To ensure adequate design of the wastewater treatment works and the minimisation of pollution.	• The wastewater treatment works must be positioned so that it is not subject to flooding and must be situated above the 1:100 year floodline. • The wastewater treatment works must be designed to treat all wastewater generated at the rendering facility on a daily basis. Sumps and pumps must also be designed taking the necessary treatment rate into account. • The wastewater treatment works must be designed to at least treat the wastewater to a quality that complies with the Department of Water Affairs' General Limit standards for discharge into a water resource or irrigation of crops. • The wastewater treatment works must be designed so that the treated wastewater exits the wastewater treatment works at a temperature no higher than 3 degrees Celsius more than the natural ambient water temperature of the receiving water resource. • Ensure sufficient freeboard to guarantee facility integrity during heavy rainfall events. This is applicable to the treated wastewater evaporation dam. • The wastewater treatment works must be designed taking electricity usage into account. Gravity flow must be used wherever possible. • All ponds/dams and/or channels must be lined with a 1.5mm HDPE liner or impermeable concrete floor to prevent leaching of potential contaminants and nutrients into the groundwater. • Pipelines conveying wastewater must be manufactured to be or painted a conspicuous colour, distinctly different from the colour of pipes that are used to convey clean water. • The following conditions were abstracted from the Department of Water Affairs' Replacement of General Authorisation in terms of Section 39 of the NWA, 1998 (Act 36 of 1998), 18 December 2009: ▪ Structures and hardened surfaces associated with the water use must not- ➢ Be erosive; ➢ Be structurally unstable; ➢ Induce any flooding; or ➢ Be a health and safety hazard. ▪ The water use must not result in a potential, measurable or cumulative detrimental- ➢ Change in the stability of the watercourse; ➢ Change in the physical structure of a watercourse; ➢ Scouring, erosion or sedimentation of a watercourse; or	Complete prior to start of construction phase.	• Chubby Chick • Engineering contractor • Wastewater treatment works designer	1	2	L	• NEMA, 1998 • NWA, 1998	

					➢ Decline in the diversity of communities and composition of the natural, endemic vegetation. ▪ The water use must not result in a potential, measurable or cumulative detrimental change in the quantity, velocity, pattern, timing, water level and assurance of flow in a watercourse. ▪ The water use must not result in a potential, measurable or cumulative detrimental change in the water quality characteristics of the watercourse. ▪ The water use must not result in a potential, measurable or cumulative detrimental change on the- ➢ Breeding, feeding and movement patterns of aquatic biota, including migratory species; ➢ Level of composition and diversity of biotopes and communities of animals and microorganisms; or ➢ Condition of the aquatic biota.						
Soil and surface water pollution due to the incorrect management of cement and concrete.	3	4	H	To prevent the pollution of soil and surface water as a result of spillage, improper handling, storage, mixing or disposal of cement and concrete.	• Cement may only be mixed on an impermeable surface (not on bare soil). • Dry cement must be removed from the soil surface to prevent an impermeable layer forming on top of the soil. The cement must be disposed of together with any building rubble. • Ready-mix trucks are not permitted to clean chutes on site. Cleaning into foundations or a dedicated cleaning pit is permitted. • Bricklayers and plasterers are to minimise any cement spill or runoff in their work area and are to ensure that the work area is cleaned of all cement spillage at the end of each workday. • Both used and unused cement bags are to be stored in weatherproof containers so as not to be affected by rain or runoff. • Contaminated soil resulting from concrete or cement spills, including residue produced by the washing of cavities, are to be removed immediately after the spillage has occurred and placed on the appropriate rubble stockpile. • Runoff from the washing out of wall cavities is to be contained against the building by excavations or berms around the foundations. All reasonable measures must be taken to prevent the dirty water from contaminating a watercourse.	During construction phase, up until operation of the facility.	• Construction contractor • ECO	2	3	M	• NEMA, 1998
Soil and surface water pollution due to the release of contaminated wash water into the environment.	3	4	H	To prevent the pollution of soil and surface water bodies, including wetlands, through contaminated wash water. An example of this would be water that is contaminated with cement or concrete.	• No washing of vehicles is permitted on site. • A dedicated temporary cleaning area is to be identified to facilitate washing of all cement and painting equipment. • The cleaning area could be a plastic lined cleaning pit or dedicated plastic or metal drums, located as close as possible to a water point. • No wastewater/wash water may be disposed of on site, onto the soil or into any water body. • Runoff from the washing activities is to be contained against the building by excavations of berms around the foundations.	During construction phase, up until operation of the facility.	• Construction contractor • ECO	2	3	M	• NEMA, 1998
Soil, surface water and groundwater pollution from irresponsible waste management practices. Nuisance caused by odours and unsightly appearance of waste onsite.	3	3	M	To prevent soil, surface and groundwater pollution and nuisance due to poor waste management.	• Building and demolition waste must be disposed of at a landfill site. Steel should be taken to a licensed recycling facility. • Installation of sufficient waste bins, skips or bulk containers. Containers must be present on site at all times. • All containers (bins, skips or bulk containers) shall be kept in a clean and hygienic manner. • Containers (bins, skips or bulk containers) utilised for the disposal of general and hazardous waste must be demarcated accordingly.	During the construction and operational phases.	• Construction contractor • ECO • Facility manager	2	2	L	• NEMA, 1998 • NEM:WA, 2008

					• Waste material may only be temporarily stored at areas demarcated for such storage practices. • General waste shall be stored in a manner that prevents the harbouring of pests. • General waste materials should always be stored or disposed of separately from hazardous waste material (e.g. oil rags). • General and hazardous waste can be deposited into appropriately demarcated bins at the construction activities. Bins are then emptied into appropriately demarcated skips or bulk containers at the end of each day or more often if required. • Skips or bulk containers should be removed to a licensed landfill site on a regular basis.						
Soil, surface water and groundwater pollution as a result of unsanitary conditions onsite.	3	3	M	Prevent soil, surface and groundwater pollution from unsanitary conditions onsite.	• Sufficient ablution facilities shall be provided – minimum of 1 toilet per 10 workers. • The ablution facilities must be on impermeable surfaces and at least 50m from the wetland. • The location of toilets shall be located within 100m of any work point. • Ablating anywhere other than in the toilets shall not be allowed. • Any temporary ablution facilities are to be secured to avoid them from blowing or falling over. • The contractor shall ensure that any chemicals and/or waste from the ablution facilities are not spilled on the ground at any time. • Ablution facilities are to be serviced weekly or more frequently if required. • The contractor is to ensure that no spillage occurs and that the contents are removed from site on a regular basis. • Ablution facilities shall be inspected and maintained to prevent and minimise blockage and leakages. • Toilets should have properly closing doors and be supplied with toilet paper. • Awareness of the importance of proper hygiene should be created among employees. • A septic tank system should be considered instead of a French drain. • Routine maintenance must be undertaken. • Implement the water monitoring programme. • Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource. • Regular review of the monitoring programme by a competent person to identify areas of improvement as well as areas that require attention.	During the construction and operational phases.	• Construction contractor • ECO • Facility manager	2	2	L	• NEMA, 1998
Soil, surface water and groundwater pollution. Toxic contaminants such as metal ions (e.g. copper, lead and zinc) and hydrocarbons can detrimentally impact upon the water quality of the area.	4	3	H	To prevent and minimise soil and water pollution as a result of poor management and accidental spills of hazardous chemical substances, fuel, greases and oils used onsite, including from leaking equipment or vehicles.	• Identify all hazardous chemical substances used onsite including fuel, greases and oils. • Obtain the material safety data sheet of each of hazardous chemical substance. • Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. • Material Safety Data Sheets for all hazardous chemical substances must be readily available on site. • Keep a stock inventory register of all chemicals in the store. • Powders must be stored above liquids. • Proper storage of chemicals in a lockable, well ventilated building. • Ensure adequate access control for the storage area. • Storage areas for hazardous chemicals are to comply with standard fire safety regulations.	During the construction and operational phases.	• Construction contractor • ECO • Facility manager	2	3	M	• NEMA, 1998

					• Safety signage including “No Smoking”, “No Naked Lights” and “Danger”, and product identification signs, are to be clearly displayed in areas housing chemicals. • Appropriate equipment to deal with emergency spill incidents is to be readily available on site. This includes fire extinguishers, spill kits for hydrocarbon spills, drip trays for equipment and/or machinery leaks, drums or containers for contaminated water. • Chemicals are to be properly labelled and handled in a safety conscious manner. • All personnel handling hazardous chemicals and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE). • Ensure that diesel/fuel tanks are in a bunded area with capacity of holding 110% of the total storage volume. • The removal of only the daily-required amount of chemicals to be used from the shed. • If refuelling on site or from drums, the ground must be protected and proper dispensing equipment is to be used i.e. hand pumps and funnels. Drums may not be tipped to dispense fuel. • Drip trays are to be utilised during greasing and re-fuelling of machinery or equipment and to contain incidental spills and pollutants. Drip trays should be emptied into secondary containers on a regular basis. • Ensure that any spilled chemical cannot exit the designated storage area by constructing a berm or bump at the exit, or store chemicals in a spill tray. • Immediately clean all spillage of fuels, lubricants and other petroleum based products. • No hazardous chemical must be discarded in the sewage or stormwater system. • Train staff on the use of chemicals in accordance with the risks as described in the material data sheets. • After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use. • Ensure that maintenance work does not take place haphazardly, but, according to a fixed plan, from one area to the other. • Maintenance of construction vehicles. • Control of waste discharges in a responsible manner. • Guidelines for implementing Clean Technologies must be considered. • Maintenance of buffer zones to trap sediments with associated toxins. • Inspection and maintenance of equipment, generators, diesel tank and vehicles owned by Chubby Chick shall take place on a regular basis. • Equipment, generators, diesel tanks and vehicles are to be repaired immediately upon developing leaks. • Drip trays shall be supplied for all repair work undertaken on machinery on site. • Drip trays are to be inspected daily for leaks and effectiveness and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • Soil contaminated with hazardous substances, fuel or oil shall be treated as hazardous waste and removed from site. • Generators must be stored on a concrete floor in a bunded area. • The diesel storage tank and bund wall must undergo a yearly integrity assessment.					
Soil, surface water and groundwater pollution. Nuisance caused by odours and unsightly appearance of waste onsite.	3	4	H	To prevent soil, surface and groundwater pollution	• Hazardous waste storage areas must be registered with the competent authority.	Life of operation	Facility Manager	2	2	L	• NEMA, 1998 • NEM:WA, 2008

				and nuisance as a result of poor waste management (waste generated at the facility and not including incoming waste from the abattoirs for processing at the rendering facility).	• The location of hazardous waste storage areas must be in accordance with GNR. 926 of 29 November 2013 (National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008): National Norms and Standards for the storage of waste). • Waste storage facilities must have correct access control and signage as stipulated in GNR. 926 of 29 November 2013. • Waste storage facilities must be operated as stipulated in GNR. 926 of 29 November 2013. • All waste storage containers must comply with the conditions as stipulated in GNR. 926 of 29 November 2013. • Training must be provided continuously to employees working with waste. The training programme must include the provisions stipulated in GNR. 926 of 29 November 2013. • An Emergency Preparedness Plan must be compiled in accordance with GNR. 926 of 29 November 2013. • Monitoring, auditing, reporting and record keeping must be conducted in accordance with GNR. 926 of 29 November 2013. • Take note that hazardous waste includes ash, empty hazardous chemical substance containers, soil and material (e.g. cloths) contaminated by hazardous chemical substances, etc. • Installation of sufficient waste bins, skips or bulk containers, where necessary. The design of the bins, skips or bulk containers must ensure containment to prevent seepage, must be covered to prevent water ingress and must be placed on impermeable surfaces within bunded areas. • All containers (bins, skips or bulk containers) shall be kept in a clean and hygienic manner. • Containers (bins, skips or bulk containers) utilised for the disposal of general and hazardous waste must be demarcated accordingly. • Waste material may only be temporarily stored at areas demarcated for such storage. • General waste shall be stored in a manner that prevents the harbouring of pests. • General and hazardous waste should always be stored and disposed of separately. • General and hazardous waste should be disposed of in appropriately demarcated bins. Bins are then emptied into appropriately demarcated skips or bulk containers once a day or more often, if required. • Skips or bulk containers should be removed to a nearby landfill site on a regular basis. No build-up of waste is permitted onsite. • Safe disposal certificates should be requested from general and hazardous landfill sites with every waste disposal. Waste may only be disposed of at landfill in accordance with the Norms and Standards for Disposal to Landfill as stipulated in Section 7(1) of the NEMWA, 2008. • These safe disposal certificates should be kept on file to illustrate compliance with the cradle to grave principle. • All waste generated at the facility must be classified in terms of GNR. 634 of 23 August 2013 (National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008): Waste Classification and Management Regulations) excluding waste listed in Annexure 1 of the regulations. • Safety data sheets must be obtained or prepared for all hazardous waste, such as boiler ash, generated at the facility, as stipulated in GNR. 634 of 23 August 2013.						

					• All waste storage containers must be labelled, as stipulated in GNR. 634 of 23 August 2013. • Detailed records must be kept of all waste generated, as stipulated in GNR. 634 of 23 August 2013. This includes the classification of the waste, quantities of waste generated and re-used, recycled, recovered, treated or disposed of (in tons or m3 per month), and by whom the waste was managed. • Waste manifest documents must be compiled for all hazardous waste generated onsite, as stipulated in GNR. 634 of 23 August 2013 (specifically Annexure 2). • All waste transporters must also complete waste manifest documents for each load of waste transported, as stipulated in GNR. 634 of 23 August 2013 (specifically Annexure 2). • Waste manifest documentation must be retained for a period of at least five (5) years. • No incineration of any kind of waste will be permitted onsite. • Implement the water monitoring programme. • Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource. • Regular review of the monitoring programme by a competent person to identify areas of improvement as well as areas that require attention.						
Soil, surface water and groundwater pollution. Nuisance caused by odours and unsightly appearance of waste onsite. Incoming abattoir waste and mortalities from the chicken farms are stored in an enclosed waste intake area.	3	4	H	To prevent soil, surface water and groundwater pollution and nuisance as a result of poor management of incoming waste from the abattoirs (waste to be processed at the rendering facility).	• Waste storage areas must be registered with the competent authority. • The location of hazardous waste storage areas must be in accordance with GNR. 926 of 29 November 2013 (National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008): National Norms and Standards for the storage of waste). • Waste storage facilities must have correct access control and signage as stipulated in GNR. 926 of 29 November 2013. • Waste storage facilities must be operated as stipulated in GNR. 926 of 29 November 2013. • All waste storage containers must comply with the conditions as stipulated in GNR. 926 of 29 November 2013. • Training must be provided continuously to employees working with waste. The training programme must include the provisions stipulated in GNR. 926 of 29 November 2013. • An Emergency Preparedness Plan must be compiled in accordance with GNR. 926 of 29 November 2013. • Monitoring, auditing, reporting and record keeping must be conducted in accordance with GNR. 926 of 29 November 2013. • Store incoming waste in a roofed area. • Incoming waste should be processed in a timely manner (i.e. when fresh) or should be refrigerated. • No incoming waste may accumulate in open areas not designated for its storage prior to processing. • Waste manifest documents must be obtained for each load of incoming waste from the abattoirs, as stipulated in GNR. 634 of 23 August 2013 (specifically Annexure 2). • All waste transporters must also complete waste manifest documents for each load of waste transported, as stipulated in GNR. 634 of 23 August 2013 (specifically Annexure 2). • Waste manifest documentation must be retained for a period of at least five (5) years.	Life of operation	Facility Manager	2	2	L	• NEMA, 1998 • NEM:WA, 2008

					• Implement the water monitoring programme. • Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource. • Regular review of the monitoring programme by a competent person to identify areas of improvement as well as areas that require attention.						
Soil, surface water and groundwater pollution due to the irrigation or discharge of ineffectively treated wastewater. Currently, rendering facility wastewater is not managed in an acceptable manner and the applicant is therefore proposing to construct a new wastewater treatment works to treat the water to irrigation or discharge standards in terms of the Department of Water Affairs' General Limit standards. Treated wastewater will be pumped into the existing evaporation dam (which will be lined) and from there it will be used to irrigate crops on the project property. Should irrigation not be possible, the treated wastewater will be discharged into the environment. A Water Use Licence application will be submitted to the Department of Water and Sanitation for the proposed water uses. Mismanagement of the proposed treatment facility may lead to discharge of partially-treated rendering wastewater into the adjacent wetland area and may result in deterioration in quality of surface water runoff towards the downstream surface/groundwater resources. A study conducted by Shangoni in 2014 recorded *Unacceptable (class 04)* water quality for the rendering facility effluent. This was largely due to the elevated salinity, ammonia, phosphate, suspended solids and a very high organic load as evident in the high chemical oxygen demand, organic content and soap-oil-grease content.	3	4	H	To ensure adequate management and treatment of wastewater generated onsite and to prevent quality deterioration of surface water within the adjacent wetland area and downstream water resources.	• An operational procedure should be implemented to ensure that the proposed treatment plant is operated effectively. • Regular water quality monitoring should be conducted in the holding dam (evaporation dam) to ensure quick response in case of treatment failure. • Process water spillages should be limited by implementing maintenance procedures on all equipment. • During the commissioning phase of the wastewater treatment works, measures should be implemented to minimise the generation of odours. • Wastewater discharged into the environment may not alter the natural ambient water temperature of the receiving water resource by more than 3 degrees Celsius. • All reasonable measures must be taken to avoid liner or concrete damage and leakage. • All reasonable measures must be taken to prevent mechanical, electrical or operational failures and malfunctions of the wastewater treatment works. • Floating matter, such as grass, may not accumulate on the surface of the evaporation pond. • The evaporation pond must be regularly inspected for signs of sludge build up and ineffective treatment of the wastewater. • Implement a preventative maintenance programme, providing for equipment reliability and availability. • Wastewater generated at the rendering facility must be treated to a quality that complies with the Department of Water Affairs' General Limit standards for discharge into a water resource or irrigation of crops. Only treated wastewater of this quality may be discharged into the environment or irrigated onto crops. • The quality of the treated wastewater being discharged into the environment or irrigated must be monitored on a monthly basis. Surface water quality monitoring must also be conducted on a monthly basis at a number of locations upstream and downstream from the rendering facility. • Flow meters must be used to record the quantity of treated wastewater discharged into the environment or irrigated on a daily basis. Flow meters must be maintained in a sound state of repair and calibrated by a competent person at intervals of not more than once in two years. Calibration certificates must be kept on record. • An incidents and complaints register must be kept on site. • Implement the water monitoring programme. • Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource. • Regular review of the monitoring programme by a competent person to identify areas of improvement as well as areas that require attention. • Currently, a significant risk is posed towards the contamination of groundwater down gradient from the evaporation dam overflow and the earthen canal. This should be verified by ongoing groundwater monitoring at strategically placed groundwater monitoring boreholes.	Life of operation	Facility Manager	2	3	M	• NEMA, 1998 • NEM:WA, 2008 • NWA, 1998

Soil, surface water and groundwater pollution due to the incorrect management of coal. Contaminated surface water runoff may enter the adjacent wetland area. Deterioration of surface water quality within the adjacent wetland area and downstream water resources may take place as a result of affected surface water runoff from the coal storage area. Exposure of runoff water to coal may result in a decrease in pH. Coal is currently stored at the rendering facility in a concrete bunker next to the boilers.	3	2	M	To ensure the proper handling and storage of coal.	• Upgrade the coal storage area to limit any possible exposure of surface water runoff. • The coal storage area should be bunded and roofed to prevent any possible exposure of clean surface water. • Prevent coal spillages during loading and remove any coal spillages from the soil and return it to the coal bunker. • Implement the water monitoring programme. • Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource. • Regular review of the monitoring programme by a competent person to identify areas of improvement as well as areas that require attention.	Life of operation	Facility Manager	2	2	L	• NEMA, 1998
Coal ash contains heavy metals and metalloids such as, Pb and Se. These contaminants can leach into groundwater discharging at discharge zones into spruits and rivers. Deterioration of surface water quality within the adjacent wetland area and downstream water resources may take place as a result of affected surface water runoff generated at the coal ash storage area. Exposure to coal ash may result in a decrease in pH and exposure to chemical compounds such as arsenic, lead, mercury, selenium, aluminium, barium, boron and chorine. Coal ash has leachate potential and may contaminate ground- and surface water resources.	5	4	H	To prevent soil, surface and groundwater pollution as a result of poor ash management.	• The temporary storage of ash within an undesignated area (bare ground) on the premises is not good practise and should not be continued. • Temporary storage of ash should take place within designated areas isolated from the clean surface runoff environment on an impermeable surface, preferably bunded and roofed. • The coal ash must be disposed of or managed in accordance with its waste classification. • Should ash be disposed of off-site, a safe disposal certificate must be obtained from the licensed waste disposal site. • Should ash be supplied to a third party for recycling or re-use, Chubby Chick should ensure that the third party is licensed for the recycling or re-use and a waste manifest document must be obtained.	Life of operation	Facility Manager	2	4	M	• NEMA, 1998
Soil and surface water pollution due to the contamination of clean stormwater runoff. A Stormwater Management Plan has been compiled to ensure effective management of clean stormwater runoff at the rendering facility.	4	3	H	To prevent the contamination of 'clean' stormwater in 'dirty' areas through effective control of stormwater runoff.	The following mitigation measures have been extracted from the Stormwater Management Plan for the rendering facility and correspond to the figure below. 1. It is recommended to redefine the current diversion berm around the rendering facility to approximately 1m in height to effectively divert clean runoff around the rendering facility's dirty area. The newly constructed berm should be vegetated to limit erosion. 2. After the proposed treatment plant (2c) has been built, it is recommended to drain and line the current evaporation dam (2d) with a HDPE lining to limit seepage. The holding dam should be managed as a clean water facility fitted with a pump for irrigation purposes. Regular monitoring should be conducted within the holding dam to ensure treated effluent meets the DWS' General Limit standards for irrigation and/or discharge purposes. 3. It is proposed to construct a sump at the blood storage tank fitted with a PVC pipe towards the sumps located below the rendering facility. It should be noted that the PVC pipe might clog. Therefore, as an alternative, an isolated trench should be constructed towards the current sumps. This strategy aims to isolate this high organic liquid from clean water runoff towards the sumps from where the proposed treatment will take place. 4. Ash generated from coal burning activities contains arsenic, lead, mercury, selenium, aluminium, barium, boron and chorine, and has the potential to leach these elements when wet. If not isolated, ash may contaminate surface and groundwater towards the downstream environment. It is recommended to store coal ash on an impermeable surface, preferably, bunded to limit seepage and contain runoff.	Life of operation	Facility Manager	2	2	L	• NEMA, 1998 • NWA, 1998

- Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource.
- The capacity of all storm water infrastructures should accommodate at least a 1:50 year flood event.
- All storm water diversion measures should be inspected and serviced regularly to ensure the design capacity and integrity is maintained.
- Affected runoff water should be controlled and not contaminate the natural clean habitat within the vicinity of the rendering facility.
- No affected water (in most cases partially treated rendering wastewater) is allowed to be spilled into the clean water environment. This should be ensured through design as well as operational control measures.
- Erosion prevention measures (e.g. grass, cement or rock) should be in place at all concentration points. These areas include roads and other infrastructure that may increase surface runoff that can potentially cause scouring.
- Continual investigation should be done to ensure the protection of water resources.
- Erosion of access roads should be addressed by implementing energy dissipaters to drain surface runoff away from the roads into the adjacent areas.

Table 28: Environmental impact assessment: Atmosphere and Noise

Activity:

- Scheduling of the construction phase for the proposed project.
- Excavation activities, loading and offloading activities and vehicles travelling to and from the site.
- Construction workers, vehicles, machinery and general noisy construction activities on site.
- General operational activities at the rendering facility.
- Burning of coal in boilers to generate steam.

Aspect:

- Construction activities occurring during inconvenient times of the day.
- Dust generation.
- Generation of noise and nuisance.
- Odour emissions from the rendering process.
- Combustion emissions from the burning of coal in the boilers.

Nature and significance of environmental impact

Project Phase Applicability		
	Planning and Design Phase	X
	Construction	X
	Operation	X
	Decommissioning	

Impact Description	Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents
	Probability	Magnitude	Severity					Probability	Magnitude	Severity	
Generation of noise and nuisance to neighbours as a result of construction activities occurring during inconvenient times of the day. Noise disturbance and nuisance to neighbours and other sensitive receptors due to operational activities. According to Jorgensen & Johnson (1981), the noise levels generated by general construction activities on a building site can reach levels of approximately 70dB, caused by for instance heavy machinery. It can therefore be assumed that the proposed development will have a negative impact on the environmental noise of the area once construction starts. Sound is inversely proportional to the distance from the source and can get absorbed by buildings and vegetation barriers. Noise intensities (dB) will be at their highest on site and will decrease as one moves away from their sources. The noise decline curve gives an indication of how noise generated at the site will decrease with distance. It gives an indication of the distance that the sound would have travelled upon reaching a level of 60 dB, prescribed by the SABS as being the acceptable limit for environmental noise. According to noise decline curve, at a distance of 27 metres from the construction	3	3	M	To maintain a dB reading of less than 50dB at the site boundary and minimise nuisance to neighbours.	• Schedule activities that will generate the most noise during times of the day that will result in least disturbance to neighbours. • Site workers and contractors will adhere to the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) regarding hearing protection and noise control measures. • Regular maintenance of vehicles and equipment. • All equipment and machinery should be fitted with adequate silencers. • Working hours should be restricted to daylight hours. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • If work is to be undertaken outside of normal work hours permission must be obtained from the ECO and the facility manager. • No noisy work is to be conducted over the weekends or on public holidays. • A complaints register must be kept onsite. The register must record the following: Date when complaint was received, name of person who reported the complaint, details of the complaint and when and how concern was addressed.	Pre-construction, construction and operational phases.	• Chubby Chick • Construction contractor	2	2	L	• NEMA, 1998 • OHSA, 1993 • NEM:AQA, 2004

site, the generated noise would have decreased to a level of 60 dB and at a distance of 45 metres it would have decreased to approximately 55dB. It can therefore be said that noise travelling further than 45 metres will have a low impact on neighbouring farms and residential areas. The distance to sensitive noise receptors (residences) is more than 45 metres in all cases.											
Ambient air quality degradation as well as disturbance and nuisance to neighbours and other sensitive receptors due to dust generated from onsite traffic.	4	2	M	To minimise the impact of excavation activities, loading and offloading activities and vehicles travelling to and from the site on the ambient air quality.	• A dustcart needs to be onsite to water down dusty roads. • Speed bumps or traffic speed signs need to be erected to reduce speeding onsite that could result in the generation of dust. • Regular maintenance of vehicles to address wear of tires and breaks. Optimal engine combustion will allow for 'cleaner' exhaust emissions. • If the soil is compacted, open areas should be ripped, fertilised and re-vegetated as soon as possible using suitable grass species (indigenous seed mix). • A complaints register must be kept onsite. The register must record the following: Date when complaint was received, name of person who reported the complaint, details of the complaint and when and how concern was addressed.	During the construction and operational phases.	• Construction contractor • Facility Manager • ECO	2	2	L	• NEMA, 1998 • NEM:AQA, 2004
Disturbance and nuisance to neighbours and other sensitive receptors due to offensive odours generated by the rendering facility. Odours are mostly caused by volatile organic compounds (VOCs) and these are the main atmospheric emissions generated at rendering facilities. VOC emissions can be made up of all or some of the following compounds: ammonia, organic sulphides, particulates, hydrogen sulphide, trimethylamine, disulphides, quinoline, C-4 and C-7 aldehydes, C-4 amines, C-3 to C-6 organic acids, dimethyl pyrazine and other pyrazines. Small volumes of the following may also be emitted: ketones, aromatic compounds, C-4 to C-7 alcohols and aliphatic hydrocarbons. Many of the compounds have low odour detection thresholds, with some as low as one (1) part per billion (ppb). Quinoline is the only compound that is classified as a hazardous air pollutant (HAP). In an Atmospheric Impact Assessment conducted for the Chubby Chick rendering facility it was determined that the current scenario/situation at the facility would only exceed the odour benchmark (1.5 OUE/m3, as a 98th percentile of hourly means over a calendar year) approximately 300m from the eastern boundary of the site. In the simulations the benchmark was not exceeded over any of the surrounding residences. Note that for this study a control efficiency of 79.8% (Sironi S *et al.*, 2007) was used. Should the biofilter not be properly maintained, it may result in an increased odour impact.	5	4	H	To avoid and/or minimise the generation of odourants at the rendering facility.	• Avoid receiving aged raw material (mortalities from farms, feathers, Dead-On-Arrivals, condemned carcasses after de-feathering, condemned material from inspection points at evisceration and other places where condemned material can be generated, floor waste and blood) by better supply chain management through the implementation of a waste management procedure for the abattoirs and chicken farms. • All material received for rendering must be processed within 24 hours. Alternatively, carcases must be refrigerated at the facility where it is generated to avoid decomposition of material. • Maintain good housekeeping and prevent build-up of raw material such as feathers, condemned carcasses, floor waste and blood. • Minimise odour concentrations within the overall building headspace air, principally by covering or enclosing the source of odour and concentrating localised extraction directly from the covered or enclosed odour sources. • Design, construct and maintain well-sealed buildings. Doorways may therefore need to be protected by fast acting doors, self-closers, air "curtains" or, in the extreme, air lock compartments. • Develop and implement an Odour Management Plan that includes routine checks and maintenance of building structures, odour control equipment and contingency plans for odour control equipment failures and breakdowns. • Investigate the effect that different stack designs would have on the odour impact. The impact of odours can be reduced by improving mixing and dispersion e.g. by the use of tall stacks. • Chubby Chick rendering facility has installed two condensers and a biofilter for the treatment of odorous emissions from their pressure cooking vessels. • According to the Department for Environment, Food and Rural Affairs (DEFRA), biofilters are the most effective odour treatment technology currently available for treating odour streams that are contaminated with "water soluble" gases (e.g. ammonia and hydrogen sulphide), such as in the case of the rendering facility. Biofilters can also be quite effective with lower solubility odorants (depending on	Life of operation	Facility Manager	3	3	M	• NEMA, 1998 • NEM:AQA, 2004

					their design) to the extent that long residence time biofilters can be more effective than wet scrubbers where there are low solubility compounds in an odour stream. Following are a few important considerations, taken from DEFRA, to be taken into account when operating a biofilter: ▪ Residence times need to be selected with due consideration given to media particle size, expected solubility of odorants, possible fluctuations in odour load and the proposed irrigation regime. ▪ It is often assumed that providing that the untreated air stream is very humid, or if there is some humidification of the supply air, then irrigation will not be needed. This is rarely the case as media beds can still dry out even with fully saturated air streams. ▪ Biofilters are simple and have relatively low management requirements, but they do require some basic checks, to ensure that the media is kept wet (in some installations frequent irrigation is absolutely critical) and media condition needs periodic checking. Some mediums, such as wood chip and heather (and sea shells in acidic odour applications) degrade naturally and will have to be replaced periodically. They also have to be checked for fissuring and other causes of uneven air distribution. • A complaints register must be kept onsite. The register must record the following: Date when complaint was received, name of person who reported the complaint, details of the complaint and when and how concern was addressed.						
Ambient air quality degradation though combustion emissions from the coal-fired boilers. Coal-fired boilers produce suspended particulate matter; ammonia; nitrogen and sulphur oxides; greenhouse gases; and may also produce VOCs.	5	4	H	To minimise the amount of combustion emissions generated and released into the atmosphere.	• Use high-grade coal where possible as lower grade coal may result in higher sulphur emissions. • Regular maintenance of the boilers. Optimal combustion will allow for 'cleaner' stack emissions. • Ensure adequate storage of coal to minimise dispersion of fine coal dust, i.e. a covered storage area. • The storage area should be demarcated and Safety signage including "No Smoking", "No Naked Lights" and "Danger", are to be clearly displayed at the coal storage area. • Fire extinguishers should be readily available at the coal storage area.	Life of operation	Facility Manager	5	3	H	• NEMA, 1998 • NEM:AQA, 2004

Table 29: Environmental impact assessment: Infrastructure

Activity: • Increased traffic frequency on road infrastructure during the construction phase.											
Aspect: • Wear of access roads and insufficient vehicle inspections.											
Nature and significance of environmental impact											
Project Phase Applicability	**Planning and Design Phase**										
	Construction	**X**									
	Operation	**X**									
	Decommissioning										
Impact Description	**Risk rating (before mitigation)**			**Environmental Objective**	**Management / Mitigation / Monitoring Measures**	**Timeframe**	**Responsibility**	**Risk rating (after mitigation)**			**Applicable legislation / other documents**
	Probability	**Magnitude**	**Severity**					**Probability**	**Magnitude**	**Severity**	

Wear of access roads, accidents on access roads, unpermitted transport of materials and loss of materials being transported on access roads.	4	2	M	To minimise the impact of an increase in traffic on access roads to the facility, during the construction phase, as well as a minimisation of the impacts during the operational phase (no increased traffic to the facility).	• Ensure that all vehicles using access roads are roadworthy. • All loads are to be securely fastened when being transported. • All vehicles are to adhere to the tonnage limitation and acquire a permit as required. • All speed limits and other traffic regulations on the public roadways must be adhered to.	During the construction and operational phases.	• Facility Manager • ECO	2	2	L	• NEMA, 1998

Table 30: Environmental impact assessment: Resource usage

Activity:
- Usage of resources, such as electricity and water (groundwater).

Aspect:
- Inefficient and redundant use of valuable resources (electricity and groundwater).

Nature and significance of environmental impact												
Project Phase Applicability	Planning and Design Phase											
	Construction	X										
	Operation	X										
	Decommissioning											
Impact Description	Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents
	Probability	Magnitude	Severity					Probability	Magnitude	Severity	
Wastage or depletion of a valuable resources (groundwater and electricity) due to inefficient or redundant usage.	3	3	M	To prevent the wastage or depletion of a valuable resources (groundwater and electricity).	**General** • Ensure that all employees have been informed on the importance of natural resources (proper environmental training and awareness). • Supervisors to inspect the operations regularly to determine areas of improvement with regards to resource consumption. • Regular maintenance and inspection of equipment such as hose pipes, to prevent leaks. • Monitoring of resource consumption. • Identify areas where resource consumption can be minimised. • Set targets to try minimise resource consumption. • Identify technologies and practices that may reduce resource consumption. • Implementation of technologies and practices that can reduce resource consumption. **Water** • Regular inspection and maintenance of all boreholes, JoJo tanks, reservoirs, toilets, water pipes and taps. • Leaking JoJo tanks, reservoirs, taps, toilets and pipes are to be repaired immediately. • Running water taps and pipes may not be left unattended.	During the construction and operational phases.	• Facility Manager • ECO	2	1	L	• NEMA, 1998 • NWA, 1998

					• All pipe, hose and tap connections are to be fitted with correct and appropriate plumbing fittings. • Groundwater may only be abstracted from the offsite borehole in accordance with the General Authorisations for the taking of groundwater (Section pending IWWMP provisions and subsequent Water Use License that will be issued by (a) water use. • The quantity of groundwater abstracted on a daily basis must be metered or gauged. Records must be kept of all abstractions. • All measuring devices must be properly maintained, must be in good working order and must be easily accessible. This shall include a programme of checking, calibration, and/or renewal of measuring devices. • The site Water Balance must be compiled and improved and updated as and when required. **Electricity** • Save electricity by turning off lights and computers when leaving the office. • Halogen light bulbs convert approximately 80% of the energy used into heat rather than light. Replace spent light bulbs with energy saving CFLs (compact fluorescent lights) or newer and more efficient LEDs (light-emitting diodes). • Improve energy efficiency by insulating cold storage buildings, if applicable. • The use of multi-effective evaporators can be considered to recover evaporative energy in the rendering process.						

Table 31: Environmental impact assessment: Hygiene

Activity:

- Operational activities at the rendering facility, especially with regards to the handling of incoming poultry and other waste.

Aspect:

- Unsanitary conditions at the rendering facility.

Nature and significance of environmental impact

Project Phase Applicability		
	Planning and Design Phase	
	Construction	
	Operation	X
	Decommissioning	

Impact Description	Risk rating (before mitigation)			Environmental Objective	Management / Mitigation / Monitoring Measures	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation / other documents
	Probability	Magnitude	Severity					Probability	Magnitude	Severity	
Outbreak of diseases and possible infection of workers at the facility.	3	3	M	To maintain clean conditions at the rendering facility, to minimise the risk of an outbreak of disease and to keep employees healthy.	• Store incoming waste in an enclosed or at least roofed area. • Incoming waste should be processed in a timely manner (i.e. when fresh) or should be refrigerated. • Access control to and from the premises and access to the premises should only be by prior arrangement. • Installation of footbaths with disinfectant at all the entrances to the rendering facility. • Installation of showers for all staff working on site. • Encourage workers to wash hands regularly.	Life of operation	Facility Manager	2	2	L	• NEMA, 1998 • OHSA, 1993

					• Provide workers associated with the wastewater treatment works with adequate PPE, such as waterproof shoes or boots and rubber gloves. • Installation of rodent bait traps and flytraps.						

Table 32: Environmental impact assessment: Heritage

Activity: • Site clearance.												
Aspect: • Disturbance of artefacts or sites of cultural heritage (archaeological and historical) significance.												
Nature and significance of environmental impact												
Project Phase Applicability	**Planning and Design Phase**											
	Construction	X										
	Operation	X										
	Decommissioning											
Impact Description	**Risk rating (before mitigation)**			**Environmental Objective**	**Management / Mitigation / Monitoring Measures**	**Timeframe**	**Responsibility**	**Risk rating (after mitigation)**			**Applicable legislation / other documents**	
	Probability	**Magnitude**	**Severity**					**Probability**	**Magnitude**	**Severity**		
Loss of artefacts or sites protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).	3	3	M	To protect artefacts or sites of cultural heritage (archaeological and historical) significance.	• If any sites, features or objects are found during site clearance, all activities must cease and a heritage expert must be contacted to investigate the site. • No sites, features or objects may be disturbed (e.g. picked up) by employees.	During construction phase, up until operation of the facility.	• Facility Manager • ECO	3	2	M	• NEMA, 1998 • NHRA, 1999	
It is unlikely that any artefacts or sites of cultural heritage (archaeological and historical) significance will be disturbed or discovered during the operational phase as no undisturbed areas will be disturbed.	N/A											

Refer to Part 8 below for a summary on the key findings related to the operation of the Chubby Chick rendering facility and its proposed upgrades and new wastewater treatment system.

7.3.2 Cumulative Impacts

Cumulative impacts refer to the situation where an activity may in itself not have a significant impact, but may become significant when added to the existing and potential impacts from similar or different activities in the area.

The following potential cumulative impacts have been identified:

Table 33: Cumulative impacts

Activity	Aspect	Cumulative Aspect
Burning of coal in the boilers to generate steam.	Generation of combustion gases such as suspended particulate matter; ammonia; nitrogen and sulphur oxides; greenhouse gases; and VOCs. The release of greenhouse gases into the atmosphere contributes to Global Warming.	While the boilers used at the rendering facility are small, there is a cumulative negative impact on the atmosphere as emissions do not remain at their generating sources, but travel extensive distances in the atmosphere. The greenhouse gas emissions from the rendering facility therefore combine with greenhouse gas emissions from other sources in the vicinity of the site as well as regional and eventually global sources.
Operational activities at the rendering facility.	Generation of odorants and subsequent nuisance to neighbours and other sensitive receptors.	The generation of odorous emissions is generally the most significant issue at a rendering facility and the subsequently caused nuisance is the main negative impact associated with rendering facilities. The odours generated at the rendering facility may have a cumulative impact when combined with other sources of odourous emissions in the area. These include chicken farms that are known for the generation of odourous ammonia emissions. There are a number of chicken farms within a 5km radius from the rendering facility. The installed biofilter should minimise the release of odorous emissions from the rendering facility.
Release of wastewater into the environment.	Pollution and degradation of groundwater resources.	Cumulative negative impacts on the groundwater resource results from a combination of the operations at the rendering facility, such as the historic storage of coal ash on bare soil and the discharge and seepage into the ground of ineffectively treated wastewater. The storage of the coal ash has likely resulted in the generation of leachate.

8. ENVIRONMENTAL IMPACT STATEMENT

8.1 Summary of key findings

The Application process for Environmental Authorisation in terms of the National Environmental Management Act, 1998, and licensing in terms of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (already issued) and the National Water Act (NWA), 1998 (Act No. 36 of 1998), has been initiated to allow the Chubby Chick rendering facility to operate legally in terms of the various environmental legislations as well as to authorise the construction of a new wastewater treatment works and the upgrading of the existing wastewater treatment system at the rendering facility.

Licensing will ensure that the rendering facility can operate for the long term without facing liabilities in terms of non-compliance to environmental legislation and the new wastewater treatment system will ensure that the rendering wastewater is treated to the Department of Water Affairs' General Limit standards for irrigation and/or discharge.

All alternatives will have an impact on the environment. The main negative impacts from the rendering facility and its proposed upgrades are summarised as follows:

- Soil-, surface water- and groundwater pollution;
- Generation of noise and subsequent nuisance to nearby landowners;
- Generation of atmospheric emissions, dust and odours and subsequent nuisance to nearby landowners;
- Loss or disturbance of vegetation;
- Loss of topsoil;
- Soil erosion;
- Potential disturbance of a wetland; and
- Contamination of surface water runoff.

8.2 Comparative assessment of positive and negative implications of the proposed activity and alternatives

Part 6 of this draft EIR contains a detailed investigation and assessment of the alternative options for the rendering facility and its proposed upgrades and new wastewater treatment works. The positive and negative implications of each alternative are also described in the table below.

From the table below, one can see that most of the significant impacts of the current rendering facility (such as the release of ineffectively treated wastewater into the environment) will be mitigated by the proposed construction of the new Wastewater Treatment Works. Consequently, the No-go option has more negative impacts than the Development Option.

Table 34: Comparison of the alternatives (identified in section 6 of this report) and the no-go option

Alternative	Positive impacts	Negative impacts
Rendering facility licensing and the construction of a new Wastewater Treatment Works	• The proposed Wastewater Treatment Works will effectively treat the wastewater generated at the rendering facility, thereby eliminating the source of soil, surface water and groundwater pollution. • The existing earth, wastewater evaporation dam will be lined, thereby eliminating the potential for pollution of the soil and groundwater due to infiltration of wastewater in the dam. • The rendering facility will be licensed in terms of the National Water Act, 1998. The facility has already been licensed in terms of the National Environmental Management: Air Quality Act, 2008. Licensing will entail the stipulation of various mitigation and management measures by the various competent authorities, all of which will result in the facility being managed in a more environmentally responsible manner. • Additional job opportunities and stimulation of the economy during the construction phase of the project.	• Additional disturbance and destruction of a small area (±120m^2) of vegetation onsite. • Noise pollution during the construction phase. • Generation of odours and other atmospheric emissions during the operational phase. • Generation of traffic during the construction phase.
No-go option	• No new disturbance of remaining undeveloped areas on site. • No additional short-term impacts on the environment due to construction activities.	• Continued pollution of soil, surface water and groundwater resources due to the release of ineffectively treated wastewater into the environment. • Continued contamination of stormwater (“clean” rainwater) flowing through the site as it comes into contact with “dirty areas”.

Alternative	Positive impacts	Negative impacts
		• Continued degradation of the hillside seep wetland onsite through the discharge of ineffectively treated wastewater into the environment. • Continued degradation of the vegetation onsite through the discharge of ineffectively treated wastewater into the environment. • Continued potential for pollution from infiltration of wastewater from the existing earth evaporation dam.

9. CONCLUSION

Information has been provided to the North West Department of Rural, Environmental and Agricultural Development and Interested and Affected Parties during the Scoping- and EIA Phases. Comments and concerns were received and integrated into this Environmental Impact Assessment Report. This document serves as the draft report to be considered by the registered I&APs and state departments. Should there be any comments received on this report within the notice period provided, these comments will be address in the final report that will be submitted to the competent authority, the North West Department of Rural, Environmental and Agricultural Development, for final perusal and decision making.

This EIA process has been carried out in accordance with the NEMA, 1998, and the Regulations there under.

The positive and negative impacts of all the alternatives have been identified and assessed in Chapter 6. The No-Go Option was found to have a large negative impact on the environment, while the Development Option has an overall score of zero (negative and positive impacts cancelling each other out). The following improvements will occur at the rendering facility as part of the development option and these cancel out the current negative environmental impacts of the rendering facility:

- An effective wastewater treatment system will be installed (improved quality of water irrigated and/or discharged into the environment and no negative impact on fauna, flora and sensitive environments, such as the onsite wetland);
- The existing earth, wastewater evaporation dam may be lined; and
- The rendering facility will be licensed in terms of the National Water Act, 1998 and has been licensed in terms of the National Environmental Management: Air Quality Act, 2004. Licensing entails the stipulation of various mitigation and management measures by the various competent authorities, all of which will result in the facility being managed in a more environmentally responsible manner.

The above mentioned improvements will decrease the environmental impact of the rendering facility, below current, No-Go Option levels.

The following main potential environmental impacts have been identified as part of this Environmental Impact Assessment process:

- Soil-, surface water- and groundwater pollution;
- Generation of noise and subsequent nuisance to nearby landowners;
- Generation of atmospheric emissions, dust and odours and subsequent nuisance to nearby landowners;
- Loss or disturbance of vegetation;
- Loss of topsoil;

- Soil erosion;
- Disturbance of a wetland; and
- Contamination of surface water runoff.

Appropriate mitigation measures will assist in minimising the potential impacts on the surrounding environment during the construction and operational phases of the proposed project. The main mitigation measures that should be applied to the rendering facility include the following:

- Environmental Awareness Training for all contractors and workers;
- A complaints register must be kept on site to record and deal with complaints from people in the vicinity of the site;
- Before any construction takes place the proposed area for the proposed new wastewater treatment system will be pegged out. All construction activities will be limited to within these areas in order to reduce the footprint disturbed and avoid impact on the wetland;
- Wastewater generated at the rendering facility must be treated to a quality that complies with the Department of Water Affairs' General Limit standards for irrigation of crops or discharge into a water resource. Only treated wastewater of this quality may be irrigated onto crops or discharged into the environment;
- All ponds/dams and/or channels must be lined with a 1.5mm HDPE liner or an impermeable concrete floor to prevent leaching of potential contaminants and nutrients into the groundwater;
- Soil, stormwater and groundwater pollution must be prevented through the correct handling, storage and disposal of cement, concrete, waste and chemicals;
- A Water Use Licence must be obtained for all water use activities occurring onsite;
- Adequate firefighting equipment must be available on site;
- The conditions of the rendering facility's Atmospheric Emission Licence must be adhered to;
- Implement the recommendations of the Odour Management Plan;
- All recommendations in the Stormwater Management Plan must be implemented;
- Implement the Water Monitoring Programme;
- If any sites, features or objects are found during site clearance, all activities must cease and a heritage expert must be contacted to investigate the site;
- The provisions of the National Norms and Standards for the Storage of Waste must be implemented, where required;
- Regular site inspection by supervisors;
- Process incoming waste in a timely manner;
- Schedule activities that will generate the most noise during times of the day that will result in least disturbance to neighbours;
- Undertake regular geohydrological studies to determine the impact of the rendering facility on the groundwater resource;
- The coal ash must be disposed of or managed in accordance with its waste classification; and
- Implementation of effective and sustainable rehabilitation and remediation practices.

Based on the outcomes of the Environmental Impact Assessment, conducted as part of this full Scoping and Environmental Impact Assessment process, as well as the alternatives assessment, the following recommendations are made:

1. **The proposed project/activity (the upgrading and licensing of the rendering facility as well as the construction of the new wastewater treatment works) should be authorised and allowed to proceed on the preferred site (26°47'16.80"S; 27°08'58.39"E);**
2. The mitigation measures proposed in this report and the draft Environmental Management Programme must be implemented during all phases of the proposed project;
3. It is assumed that the Wastewater Treatment Works will operate as designed and will effectively treat the rendering facility wastewater to a quality that complies with the Department of Water Affairs' General Limit Standards for irrigation and/or discharge of wastewater into the environment;
4. It is assumed that the wastewater volumes generated at the rendering facility will not exceed the design capacities of the Wastewater Treatment Works;
5. It is assumed that the mitigation measures proposed in this report and the draft Environmental Management Programme will be correctly implemented by the applicant and that they will be effective;
6. A communications pathway must be established that would allow the designated ECO to accept and deal with stakeholder complaints;
7. Proposed mitigation measures should be incorporated as far as possible into the operational plan for the rendering facility; and
8. Strict monitoring and enforcement of requirements of the EMP must be undertaken to ensure that contractors and operators adhere to these requirements.