



UKUPHA FARMING (PTY) LTD

**Draft Basic Assessment Report in support of
an expansion of broiler houses**

DRAFT FOR PUBLIC COMMENT

Reference:

Report date: 27 September 2021

SHANGONI
Management Services (Pty) Ltd

Executive summary

Ukupha Farming (Pty) Ltd (hereafter referred to as “Ukupha”) is located near Delmas on portion 18 and portion 20 of Farm Klipspruit in the Mpumalanga Province South Africa. In 2012 Ukupha got authorisation to construct eight houses on portion 20, but due to unforeseen reasons they only constructed six of the houses. The authorisation expired at the end of 2015 and therefore Ukupha again wants to apply for the construction of the two extra houses on portion 20. The proposed expansion project entails the construction and operation of four new controlled environment poultry broiler houses on portion 18 and the two houses on portion 20. Each house on portion 18 will have the capacity to house 35 000 chicks at full capacity and each of the houses on portion 20 will be able to house up to 40 000 chicks. The houses will be heated during the cold winter months by means of coal-heaters fans on portion 18 and the houses on portion 20 will be heated by means of a coal-heated water system that flows underneath the house.

On each of the portions, a new 345 cubic metre reservoir will be built as drinking water for the chicks as well as for the water heating system on portion 20. The proposed expansion project will extend approximately 3 ha on portion 18 and 2 ha on portion 20.

Minor details of the construction methodology will be refined upon appointment of the contractors. Due to the extent and nature of the activities associated with the proposed project, the Environmental Assessment Practitioner (“EAP”) has identified that a Basic Assessment (“BA”) process is required in terms of the NEMA EIA Regulations, GN R.982 dated 2014, as amended.

This Basic Assessment Report (“BAR”) has investigated and assessed the significance of the predicted, potential positive and negative direct, indirect, and cumulative impacts associated with the proposed expansion project, with mitigation and management actions included in the Environmental Management Programme report (“EMPr”) in Part B of this BAR



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REFERENCES

- Limnosella Consulting (Pty) Ltd. June 2012. *Proposed Ukupha Poultry Farm Expansion, Klipspruit, Delmas, Mpumalanga Province. Aquatic Biodiversity Assessment.*
- *Profile and analysis District development model: Nkangala District: Mpumalanga. July 2020.*
- Shangoni Management Services (Pty) Ltd. July 2012. *Basic Assessment Report: Tillado Investments' Poultry Farm Development. Locality: Portions 14 & 20 of the farm Klipspruit 199 IR, Mpumalanga. Departmental Reference No: 17/2/3 N-73.*
- Shangoni Management Services (Pty) Ltd. AquScienc. August 2021. *Ukupha Farming (Pty) Ltd. Geohydrological investigation for Water Use Licence Application.*
- Scientific Terrestrial Services CC. July 2021. *Terrestrial Biodiversity Assessment as Part of the Environmental Authorisation Process for the Proposed Expansion of Broiler Houses on Portions 18 and 20 of the Farm Klipspruit 199 IR, Mpumalanga Province.*
- Sidney Miller. Architectural and Archaeological Conservation Consultant. 21 June 2021. *1st Phase H.I.A. The proposed expansion of broiler houses on portions 18 and 20 of the farm Klipspruit 199 IR, Mpumalanga Province, South Africa*
- Weather Base. Delmas South Africa. <https://www.weatherbase.com/weather/weather-summary.php3?s=604908&cityname=Delmas,+South+Africa>. Date of access: 19 July 2021.



PART A:

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1 Details of project applicant and environmental assessment practitioner

1.1 Details of project applicant

Name of operation	Ukupha Farming (Pty) Ltd
Applicant	Ukupha Group
Postal address	First Floor Leopard Creek Building The Greens Office Park Charles de Gaulle Cr Highveld 0123
Responsible person	Mashudu Mugwabana
Telephone no.	+27 (0)10 133 0820/079 736 1217
e-mail address	mashudu@ukuphagroup.com
Company registration no.	1998/023738/07

1.2 Details of the environmental assessment practitioner

EAP	Shangoni Management Services (Pty) Ltd.: Lesley Keay
Tel No	(012) 807 7036
Fax No	(012) 807 1014
e-mail Address	lesley@shangoni.co.za

1.3 Expertise of the environmental assessment practitioner

Name and Surname	Qualifications and summary of experience
Lesley Keay	Lesley is a junior environmental consultant. She obtained her B.Sc. Hons in Environmental Science with Aquatic Ecosystem Health from the North West University. Lesley assists with the compilation of various reports required as part of Environmental Authorisation processes, including amongst other; Basic



Name and Surname	Qualifications and summary of experience
	Assessments and Environmental Management Programmes. She also has experience in Water Quality Assessment and translating public documentation
Ashley Miller	Ashley obtained his B.Sc (Honours) degree in Environmental Analysis and Management through the University of Pretoria. Ashley is part of the Environmental Authorisations Department at Shangoni Management Services (Pty) Ltd. and has experience in drafting Basic Assessment Reports, Scoping Reports, Environmental Impact Assessments (EIA), Environmental Management Programme Reports (EMPr), Integrated Water and Waste Management Plans (IWWMP) and Integrated Water Use Licence Applications (IWULA). Ashley is also the Product Lead of Environmental Assurance and has the following experience in auditing: Due diligence audits, External Water Use Licence audits, Environmental Authorisation audits, Environmental Management Programme audits, Waste Management Licence audits and Atmospheric Emissions Licence audits. Ashley has also gained valuable experience in Geographic Information Systems (GIS) in compiling regional, locality and infrastructure maps and mine plans.
Brian Hayes	Brian has for the past 29 years been actively involved in environmental management and engineering primarily in the mining, FMCH and petrochemical industries. A registered professional engineer (Chemical) with a master's degree in environmental engineering, Brian is responsible for quality assurance within the environmental department whilst also actively involved in consulting to clients on aspects and projects related to environmental assurance.

2 Description of the property

Table 1: Description of the properties applicable to the project

Fame name	Portion 18 of the farm Klipspruit 199 IR Portion 20 of the farm Klipspruit 199 IR
Application area (ha)	5 ha
Magisterial district	The project area is located within the jurisdiction of the Victor Khanye Local Municipality, in the Mpumalanga Province.
Distance and direction from nearest town	Bronkhorstspuit – 23 km south; Delmas – 18 km north Pretoria – 50 km south east
21-digit Surveyor General code for each Farm Portion	T0IR00000000019900018 T0IR00000000019900020



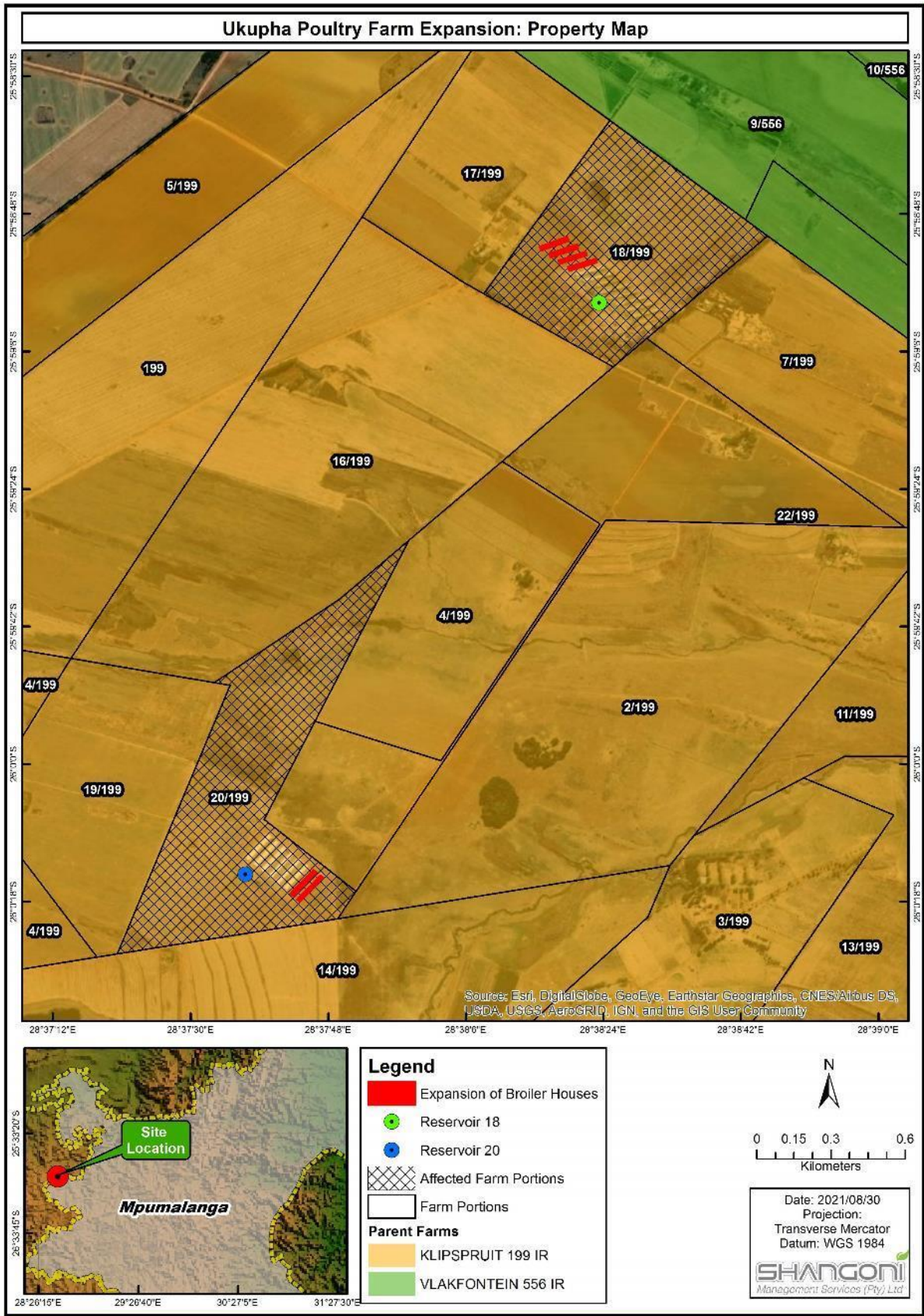


Figure 1: Affected properties associated with the proposed broiler houses



3 Locality of the project

3.1 Magisterial district and administrative boundaries

Ukupha Farming (“Ukupha”) falls within the administrative boundaries presented in Table 2.

Table 2: Administrative boundaries

Province	Mpumalanga
District municipality	Nkangala District
Local municipality	Emakhazeni Local Municipality
Mpumalanga Department: Agriculture, Rural Development, Land and Environmental Affairs (“MDARDLE”), Competent Authority (“CA”)	Head Office, Mbombela
Department of Water and Sanitation (“DWS”) Local Office	Head Office, Mbombela
Catchment zone	Olifants Catchment Area
Water Management Area (“CMA”)	Olifants Water Management Area (“WMA”)
Quaternary catchment	B20B

3.2 Location of the proposed activities

The proposed project is located within the remaining extent of Farm Klipspruit 199 Portion 18 and 20 IR in the Mpumalanga Province of South Africa. Ukupha is located approximately 18 km north of Delmas, 50km south east of Pretoria and 23 km south from Bronkhorstspuit (Figure 2). Refer to Table 2 above for property details as well as Figure 1 for an illustration of the property applicable to the proposed project.



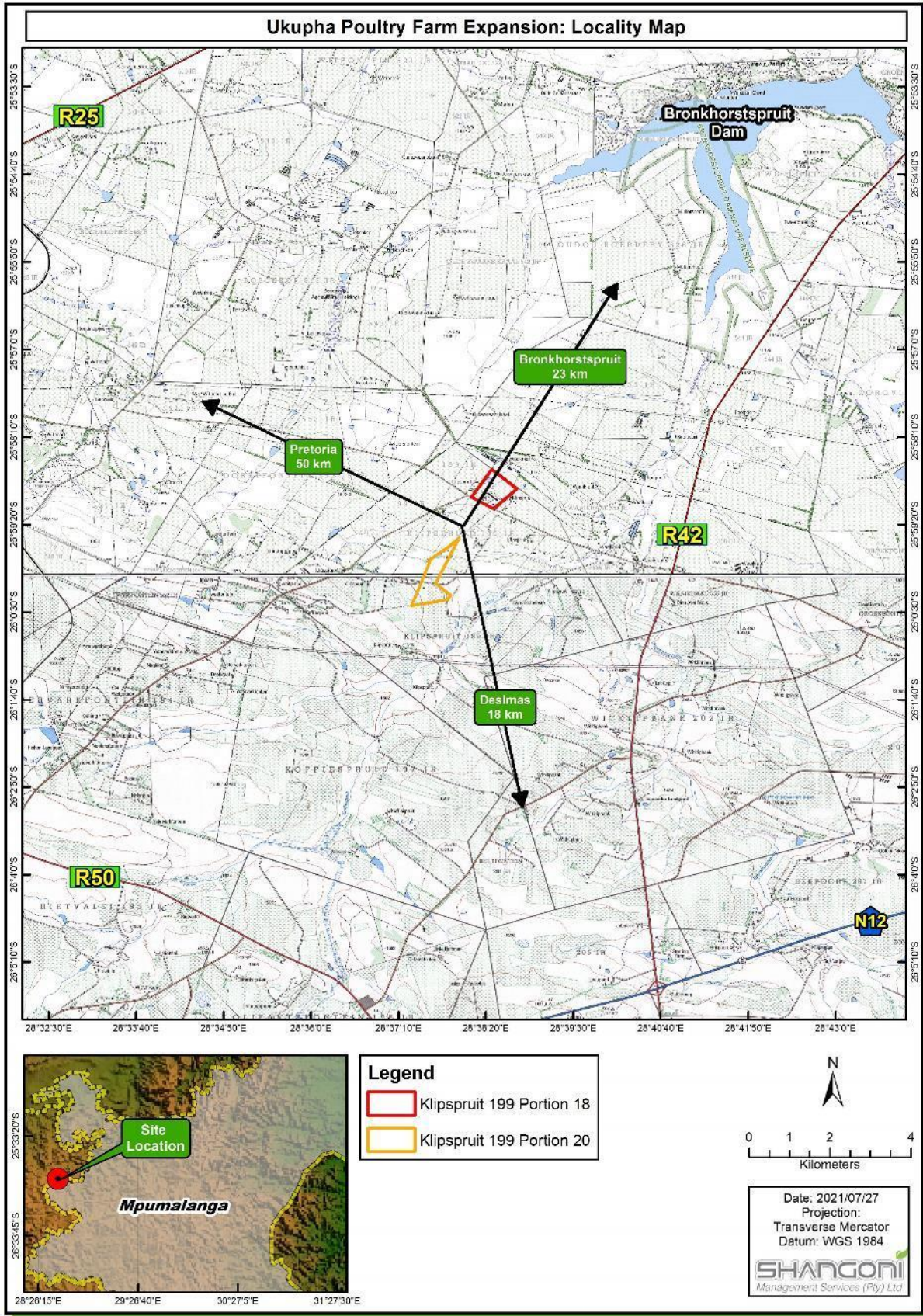


Figure 2: Locality map



4 Description of the scope of the proposed overall activity

The application for environmental authorisation for listed activities in support of the application for the proposed activities will be conducted in accordance with the EIA Regulations 2014, as amended by GN.326 dated 07 April 2017, pertaining to environmental impact assessments, under Sections 24(5) and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”), as amended and a General authorisation (“GA”) for activities in terms of the National Wetland Act (Act No. 36 of 1998) (“NWA”)

Listed activities have been identified as associated with the proposed expansion of broiler houses (“the project”) and are provided in Table 3 below.

4.1 Listed and specified activities

Table 3: Activities and listed activities associated with the project.

Name of activity	Aerial extent of the activity (Ha or m ²)	Listed activity Mark with an x where applicable or affected.	Applicable listing notice (GNR 983, GNR 984 or GNR 5985)
Expansion of Broiler houses			
Construction of four additional houses on Portion 18 and two additional houses on Portion 20 and of Farm Klipspruit.	5 ha	X	<u>Activity 5(iv) of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The development and related operation of facilities or infrastructure for the concentration of— (iv) more than 25 000 chicks younger than 20 days per facility situated outside an urban area.
Construction of a 350 m ³ reservoir on Portion 18 and Portion 20 of Farm Klipspruit.	1 ha	X	<u>Activity 12(i) of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres
Construction of four additional houses on Portion 18 and two additional houses on Portion 20 and of Farm Klipspruit.	5 ha	X	<u>Activity 27 of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Construction of the two houses on Portion 20 of Farm Klipspruit.	1 ha	X	<u>Activity 32 of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The continuation of any development where the environmental authorisation has lapsed and where the continuation of the development, after the date the environmental authorisation has lapsed, will



Name of activity	Aerial extent of the activity (Ha or m ²)	Listed activity Mark with an x where applicable or affected.	Applicable listing notice (GNR 983, GNR 984 or GNR 5985)
			meet the threshold of any activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014.
Construction of four additional houses on Portion 18 and two additional houses on Portion 20 and of Farm Klipspruit.	5 ha	X	<u>Activity 40(ii) of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by— (ii) more than 5 000 poultry per facility situated outside an urban area.
Construction of four additional houses on Portion 18 and two additional houses on Portion 20 and of Farm Klipspruit.	5 ha	X	<u>Activity 43 of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The expansion and related operation of hatcheries or agri-industrial facilities outside industrial complexes, where the development footprint of the hatcheries or agri-industrial facilities will be increased by 2 000 square metres or more.
Construction of four additional houses on Portion 18 and two additional houses on Portion 20 and of Farm Klipspruit.	5 ha	X	<u>Activity 48(i) of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> The expansion of— (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;
Construction of a 350 m ³ reservoir on Portion 18 and Portion 20 of Farm Klipspruit.	1 ha	X	<u>Activity 2 of Listing Notice 3 (GNR 983 of 4 December 2014, as amended):</u> Construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres. dd) Critical Biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.
Construction of four additional houses on Portion 18 and two additional houses on Portion 20 and of Farm Klipspruit.	5 ha	X	<u>Activity 12 of Listing Notice 3 (GNR 983 of 4 December 2014, as amended):</u> The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

4.2 Description of the proposed activities to be undertaken

Construction

The proposed expansion entails the construction and operation of four new controlled environment poultry broiler houses on portion 18 and two on portion 20 of the Farm Klipspruit 199 IR.



The physical footprint of the development will be approximately 3 ha and 2 ha on portion 18 and portion 20, respectively. The footprint will comprise of poultry broiler houses, open spaces between the houses, a bio-security buffer zone surrounding all broiler houses and a reservoir of 345 m³ will also be constructed on portion 18 as well as portion 20.

The four new broiler houses on portion 18 will have dimensions of 12 m X 108 m each and two new broiler houses on portion 20 will have dimensions of 14 m X 120 m each. The frame of each house will be of a steel-beam structure, specially designed and prefabricated off site. During construction, the steel frame will be assembled on the prepared concrete floor and then bricked up and roofed. The walls and ceilings of each house will be cladded internally with isolation material (ISO panels).

Each house on portion 18 will have the capacity to house 35 000 chicks at full capacity and each of the houses on portion 20 will be able to house up to 43 500 chicks. The total number of chickens for the new houses will be 140 000 chickens for portion 18 and 87 000 chickens for portion 20.

Suspended drinker lines with special nipple attachments allow for a good distribution of clean drinking water for the chickens throughout the production cycle. The height of the drinker lines will be adjusted as the chickens grow older and taller and the nipple attachments each act as a non-return valve that prevents the unnecessary spillage of water within the houses.

Chicken feed will be transported from the feed silos located outside (directly adjacent) the houses by means of a mechanical auger system into the houses. The feed will enter suspended feed baskets that work on a gravity feed basis and are also adjusted in height throughout the production cycle, similar to the drinker lines.

The houses on portion 18 will be heated during the cold winter months by means of the existing coal fired heaters. The new heaters will be connected to ventilation socks (cylindrical plastic tubes) fitted with ventilation fans blowing hot air into the chicken houses to effectively and evenly distribute the hot air throughout the houses. The houses on portion 20 will be heated by means of a coal-heated water system that was installed during the construction of the six existing houses in 2012. The coal-heated water flows underneath the house heating it. Insulation and other design aspects of the houses will ensure that the heat is captured and retained for longer periods, making the heating process more energy efficient and cost effective. Ventilation fans fitted at the head of each house will also contribute to better ventilation and temperature control.

A new 345 cubic metre reservoir with a diameter of 15.2 m and a height of 1.9 m will be built on each of the farm portions. The reservoirs are going to be built with galvanised side walls and side wall stiffeners will be used to prevent wind damage and to withstand a wind speed of 144 km/h.

The existing electric fence will be extended to ensure that nobody or any other farm animal can enter the restricted Bio-security zone.

In 2012 Ukupha got authorisation to construct eight houses on portion 20, but due to unforeseen reasons they only constructed six of the houses. The authorisation expired at the end of 2015 and



therefore Ukupha again wants to apply for the construction of the two extra houses on portion 20 to be constructed.

Operation

At the end of each production cycle (33 days) each house will be cleaned out using the same “dry clean” method currently implemented at the existing houses. The litter (mixture of manure and bedding material) will be gathered and collected with brooms and shovels into bags that are removed the same day by the currently appointed registered contractor.

Much care will be given to the overall well-being of the chickens throughout each production cycle. However, there will always be a percentage of chickens that will not survive (mortalities) due to the limitations and challenges of each production cycle. Mortalities will be collected and stored in a freezer until full. The registered contractor will then collect the remains as they are currently doing. It is expected that the percentage of mortalities for one year will vary between 3-10% with an average of approximately 7%.

The new constructed reservoirs will be filled using the existing boreholes Ukupha is currently using for domestic water as well as for the broiler houses. The boreholes currently in use on each portion was subjected to a borehole yield test conducted in August 2021 that indicated the borehole yield is sufficient for the requirements for the additional houses, indicating that the total for the existing and new houses will approximately be 6000 ℓ for portion 18 and 10 000 ℓ water for portion 20.

Ukupha is currently burning a total of 248 tonnes of coal during the colder months (June and July) and 160 tonnes during the warmer months (August to May) for both the existing heating systems combined per cycle (33 days). The expansion project will add an additional amount of 71 tonnes in the colder months and 46 tonnes in the warmer months for portion 18 and an additional 36 tonnes in the winter months and 23 tonnes in the warmer months for portion 20 per 33-day cycle.



Figure 3: The Current feeding and drinking points in the broilers



Figure 4: An example of the reservoir Ukupha is planning to construct



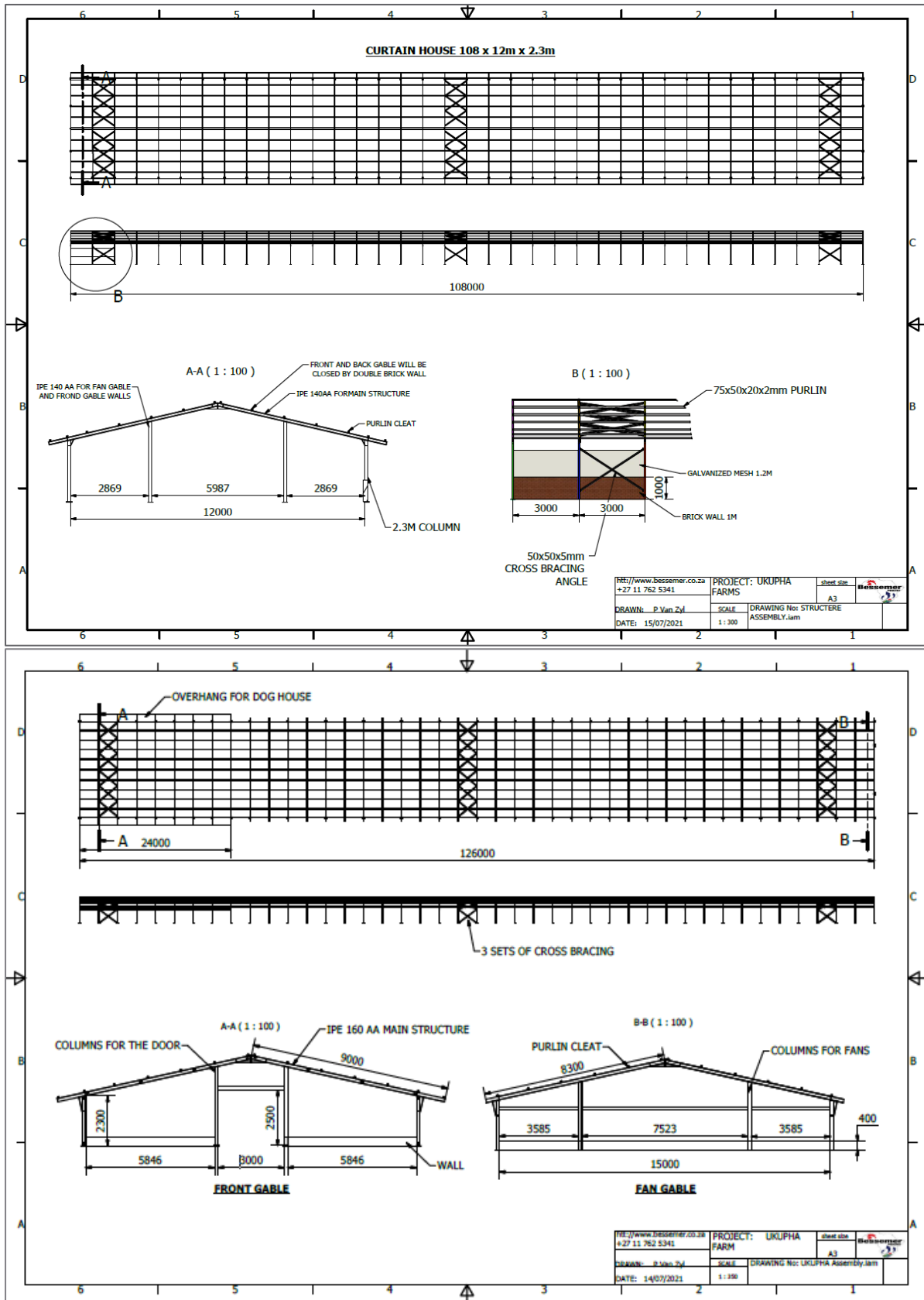


Figure 5: An example of the broiler houses



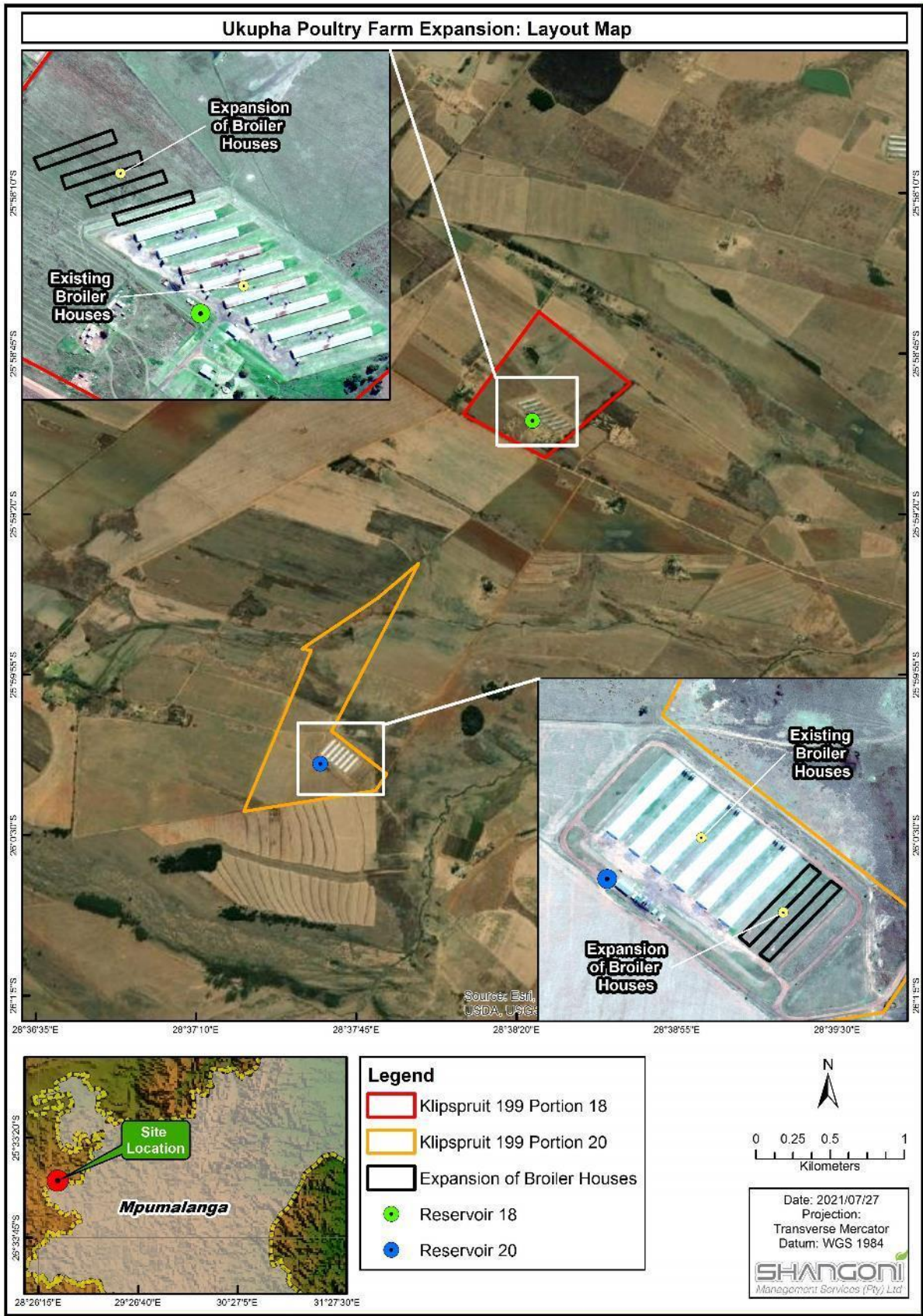


Figure 6: Layout map.



5 Policy and legislative context

The following table is a summary of the policy and legislative context applicable to the project.

Table 4: Policy and legislative context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
The Constitution of the Republic of South Africa (1996).	The Constitution of the Republic of South Africa was considered and applied to throughout the Basic Assessment Report ("BAR"), as the Constitution states that everyone has the right; (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that; (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.
The National Environmental Management Act, 1998 (Act No. 107 of 1998).	The BAR has been compiled in terms of GN R.982, promulgated in terms of Sections 24(5), 24M and 44 of the National Environmental Management Act, Act No. 107 of 1998 ("NEMA").
The Environmental Impact Assessment Regulations, R. 982 dated December 2014, and amended.	The BAR was compiled in terms of the requirements of the Environmental Impact Assessment ("EIA") Regulations (GN R.982 dated 2014, as amended).
Guideline on Need and Desirability in terms of the Environmental Impact Assessment ("EIA") Regulations, 2010. Government Notice 891 of 2014	The need and desirability were assessed for the project and are discussed in Section 6 below.
The National Water Act (Act No. 36 of 1998, as amended).	<p>The proposed project will require a water use licence as the proposed areas for portion 18 is 200 m and portion 20 is 60 m from a water body.</p> <p>There are two boreholes on each portion but only BH01 and BH04 is currently used on portion 18 and 20 respectively. The borehole on portion 18 will be able to pump a maximum of 01 l/s and the borehole on portion 20 will be able to pump a maximum of 2.95 l/s on a 24- hour duty cycle. To ensure the 345 m³ reservoir is filled up.</p> <p>Ukupha is in the process to apply for a full Water Use Licence for the boreholes on site.</p>
The National Environmental Management: Biodiversity (Act 10 of 2004, as amended).	Biodiversity disturbance related to the proposed project was considered when the sites were selected.
Alien and Invasive Species Regulations (GN R598 dated 2014).	The occurrence of alien and invasive species was assessed in accordance with these regulations. Both the Portions are disturbed areas as per the terrestrial biodiversity assessment.



APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
Conservation of Agricultural Resources (Act 43 of 1983).	Erosion potential will be assessed and mitigated (in accordance with this act) during the construction and operational phases of the proposed project.
The National Environmental Management: Air Quality (Act 39 of 2004, as amended).	The project does not require an Atmospheric Emissions Licence (“AEL”).
SABS Code of Practice 0103 of 2008: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication. SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.	The SABS Code of Practice 0103 will be taken into account when the mitigation measures for the project are identified
National Environmental Management: Waste Act (Act No. 59 of 2008, as amended).	The National Environmental Management: Waste Act 59 of 2008 will be taken into account during the construction and operational phases of the proposed project. The waste, chicken manure and bedding, generated during the cycle are collected and bagged in an airtight container immediately after the production will be removed by a registered contractor. The mortalities will be stored in a refrigerator until full. The remains will then be collected by a registered contractor who collects it for crocodile feed.
National Heritage Resources Act (Act No. 25 of 1999, as amended).	No archaeological or historical sites are affected by the project.

6 Need and desirability of the project

6.1 Need and Desirability in terms of the Guideline on Need and Desirability, 2017

In 2017, the then Department of Environmental Affairs published an Integrated Environmental Management Guideline, the Guideline on Need and Desirability. The following provides information on how the guideline requirements were considered in this BAR and should be read in conjunction with the guideline.

6.1.1 How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?¹

- The ecological integrity of the area has been assessed as part of the specialist assessments (wetland impact assessment and terrestrial biodiversity assessment) with the baseline

¹ Section 24 of the Constitution and section 2(4)(a)(vi) of NEMA refer.



environmental description provided in section 7.4. Chapter E, F and L. The potential impacts that have been identified and may occur because of the proposed activities will be discussed in section 7.5 of this document.

- The proposed construction of the additional broiler houses is located within already disturbed agricultural areas; therefore the proposed project will have a small impact on the ecological integrity of the area. Refer to section 1.4.4 of Part B for the mitigation measures to be applied.
- The anticipated emissions released due to the coal heaters will only take place during the winter months and insulation material will be used to keep the heat inside for longer period. The impacts will further be discussed and assessed in greater detail as part of the impact risk assessment in section 7.5 and in the Environmental Management Programme section of this document.
- The preliminary potential impacts that have been identified and may occur as a result of the proposed activities have been discussed in Part 7.5 of this document.
- The proposed construction of the additional broiler houses will be constructed in an area that does not have an impact on the nation's cultural heritage or palaeontology.
- With our current knowledge the level of risk can be considered low Refer to section 16 of Part A in this document. The potential risks have been identified in section 7.5 and will be further assessed in detail in Section 8 and in the Environmental Management Programme section of Part B of this document.

6.1.2 Promoting justifiable economic and social development²

- The Mpumalanga spatial development plan includes an Agriculture Policy Action Plan (“APAP”) that seeks to achieve decent employment through inclusive growth as well as comprehensive rural development and food security. The APAP recognises agriculture as a sector with significant job creation potential and with strategic links to beneficiation opportunities. The expansion of the broiler houses will contribute to the APAP.
- A conservative approach was followed in terms of the identification and assessing of environmental impacts associated with the expansion of the broiler houses.
- No negative impacts on the socio-economy as a result of the expansion of the broiler houses have been identified. Refer to section 7.7 of this report for the identification of positive impacts. This application will continue to contribute to the socio-economy in the area.
- The needs of the community will be determined through the public participation process of this BAR with the results of the public participation process presented in the Public Participation Report. The public participation process that has been conducted aims to ensure that all I&APs are provided with an opportunity of access to information regarding the proposed solar plant and to raise any concerns or provide any comments on the project.
- The construction of the additional broiler houses addresses the national challenge of food security in South Africa. This will address the food security challenge in South Africa by trying to maintain

² Section 24 of the Constitution refers.



the increase for food demand and by seeking to eliminate inequalities and poverty amongst households.

- The additional broiler houses can be seen as a facility of which construction and operation will contribute to the local economy.

7 Motivation for the overall preferred site, activities and technology alternative including a full description of the process followed to reach the proposed preferred alternatives within the site

7.1 Details of the development footprint alternatives considered

No alternatives to the proposed project could be identified as the area required for the chicken houses are only suitable on the preferred site that will be next to the existing broilers and close to the existing infrastructure.

7.2 Details of the Public Participation Process followed

The public participation process for this project was conducted in terms of:

- The procedures and provisions in terms of the NEMA;
- Chapter 6 of the 2014 EIA Regulations;
- GN 807 of 2012; Public Participation Guideline; and
- Other relevant legislation such as the Promotion of Access to Information Act ("PAIA"), 2000.

A detailed public participation process was undertaken, and included the following:

- Key Stakeholder identification;
- Method of notifications, e.g. advertisements, site notices, Background Information Document ("BID"), email and SMS notifications;
- Registration of Interested and Affected Parties ("I&APs") and key stakeholders;
- Access and opportunity to comment on the draft BAR by I&APs; and
- Consultation with the relevant authorities.

The following key stakeholder were identified and notified of the project:

- Landowner/s;
- Lawful occupier/s of the land;
- Landowners or lawful occupiers on adjacent properties;
- Municipal councillor;
- Municipality;
- Organs of state;
- Communities; and
- Other Competent Authorities affected.



The following notification and consultation methods were used:

- Newspaper advertisement in the Streek News was placed on the XX October 2021;
- Site notices were placed around the project site at different, noticeable and conspicuous places on the XX October 2021;
- Background Information Document (“BID”) sent to key stakeholders with email and SMS notifications; and
- The potential key stakeholders were notified of the project and have been provided with the opportunity to register as an I&AP.

The draft BAR and EMPr is available to the public for review for a period of thirty (30) days, from XXX October 2021 to XXX Novemeber 2021. An electronic copy of the BAR and EMPr will also be placed on the Shangoni’s website (www.shangoni.co.za) for public comment for the same period of thirty days.

Once the public review of the draft BAR has been completed, the report will be finalised inclusive of the comments from I&APs and will be submitted to the DMRE for review. Once DMRE has made a decision, registered stakeholders will be notified of the decision.

7.3 Summary of issues raised by I&APs

The table below will be completed when the final BAR is compiled and will provide a summary of the comments and issues raised and reaction to those responses.

Table 5: Comments and response table.

INTERESTED AND AFFECTED PARTIES	DATE COMMENTS RECEIVED	ISSUES RAISED	EAPS RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	SECTION AND PARAGRAPH REFERENCE IN THIS REPORT WHERE THE ISSUES AND OR RESPONSE WERE INCORPORATED
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No comments received to date as this is the draft Basic Assessment Report. Comments received will be included in the final Basic Assessment Report.

7.4 The environmental attributes associated with the baseline environment

7.4.1 Type of environment affected by the project

A baseline description or “status quo” of the present environmental situation included in this section is specifically relevant to the project.

The following attributes / aspects have been described in detail, in the following respective chapters:

- Chapter A: Geology
- Chapter B: Climate
- Chapter C: Topography



- Chapter D: Soils, Land Use and Land Capability
- Chapter E: Flora
- Chapter F: Fauna
- Chapter G: Surface water
- Chapter H: Groundwater
- Chapter I: Air Quality
- Chapter J: Archaeology and Cultural History
- Chapter K: Sensitive landscapes
- Chapter L: Regional socio-economic structure

As informed by various specialist studies and other public documents (e.g. IDP):

- Limnosella Consulting (Pty) Ltd. June 2021. *Proposed Ukupha Poultry Farm Expansion, Klipspruit, Delmas, Mpumalanga Province. Aquatic Biodiversity Assessment.*
- *Profile and analysis District development model: Nkangala District: Mpumalanga July 2020.*
- Shangoni Management Services (Pty) Ltd. July 2012. *Basic Assessment Report: Tillado Investments' Poultry Farm Development. Locality: Portions 14 & 20 of the farm Klipspruit 199 IR, Mpumalanga. Departmental Reference No: 17/2/3 N-73.*
- Shangoni Management Services (Pty) Ltd. AquSciene. August 2021. *Ukupha Farming (Pty) Ltd. Geohydrological investigation for Water Use Licence Application.*
- Scientific Terrestrial Services CC. July 2021. *Terrestrial Biodiversity Assessment as Part of the Environmental Authorisation Process for the Proposed Expansion of Broiler Houses on Portions 18 and 20 of the Farm Klipspruit 199 IR, Mpumalanga Province.*
- Sidney Miller. Architectural and Archaeological Conservation Consultant. 21 June 2021. *1st Phase H.I.A. The proposed expansion of broiler houses on portions 18 and 20 of the farm Klipspruit 199 IR, Mpumalanga Province, South Africa*
- Weather Base. Delmas South Africa. <https://www.weatherbase.com/weather/weather-summary.php3?s=604908&cityname=Delmas,+South+Africa>. Date of access: 19 July 2021.

Chapter A: Geology

Ukupha is situated in the southern part of the Transvaal basin. The Transvaal Supergroup underlies the area and is divided into the Chuniespoort and Pretoria Group. The Chuniespoort Group consists of carbonate rocks while the Pretoria Group is made up of alternating beds of shale and quartzite with volcanic rocks in between. The Pretoria Group consists of the following formations, listed from the base upwards: Rooihogte, Timeball Hill, Hekpoort, Strubenkop, Daspoort, Silverton, Magaliesberg and Rayton.

Chapter B: Climate

Ukupha falls within a typical of Highveld climate zone, with relatively warm to hot summers and fairly high rainfall, and moderate to cool winters with little or no rain. Valleys and wetlands are much cooler



at night and more prone to frost than higher lying areas. The area experiences thunderstorms during the summer months, usually in the late afternoons.

Rainfall occurs primarily during the mid-summer months (December – March) with a mean annual precipitation of 654 mm ranging between 570 mm and 730 mm. This region has very dry winter months.

During the warm months (September to March), the temperatures lie between 15 °C and 26 °C, while the cold months (April to August) they vary between 1 °C and 18 °C. The predominant wind direction for this region arises from a northerly direction.

Chapter C: Topography

The general topography of the area is flat to slightly undulating (Laubscher & Lubbe, 2009). The investigated site is situated on land sloping at 2-8° towards the Koffiespruit that runs through the eastern part of the property, forming a tributary of the Bronkhorstspruit to the north. The area is located at approximately 1 495 metres above mean sea level.

Chapter D: Soil, land use and land capability

Ukupha has mostly red and/or yellow apedalmesotrophic and/or dystrophic soils, with Hutton (red) soils dominating within the proposed project area. These soils have low to medium base status and the soil depth lies in the range of between 450 mm and 750 mm deep. The clay component of the topsoil represents between 15% and 35% of the total volume of soil and these soils have a medium agricultural production potential. According to Figure 13 the soil present on the site is classified as code S2. These sites represent soil classified as S2 which means that the soil is structureless and freely drained with favourable physical properties. The soil may have restricted soil depth, high erodibility, low natural fertility, and excessive drainage.

Along the Koffiespruit, a narrow and poorly developed strips of alluvial soils are likely to occur. This is the case for most of the large rivers and their tributaries in the area. The alluvial soils usually cover flat areas surrounding the rivers or streams and are between 100 and 200 metres wide in some places. These soils are usually black or grey in colour due to the high amounts of organic matter and smectitic clay. Further away from the rivers and their tributaries the alluvial soils thin out and their colour changes from black or grey to light grey. At greater distances from the water courses the alluvial soils grade into different soil types that have brown and/or red colours.



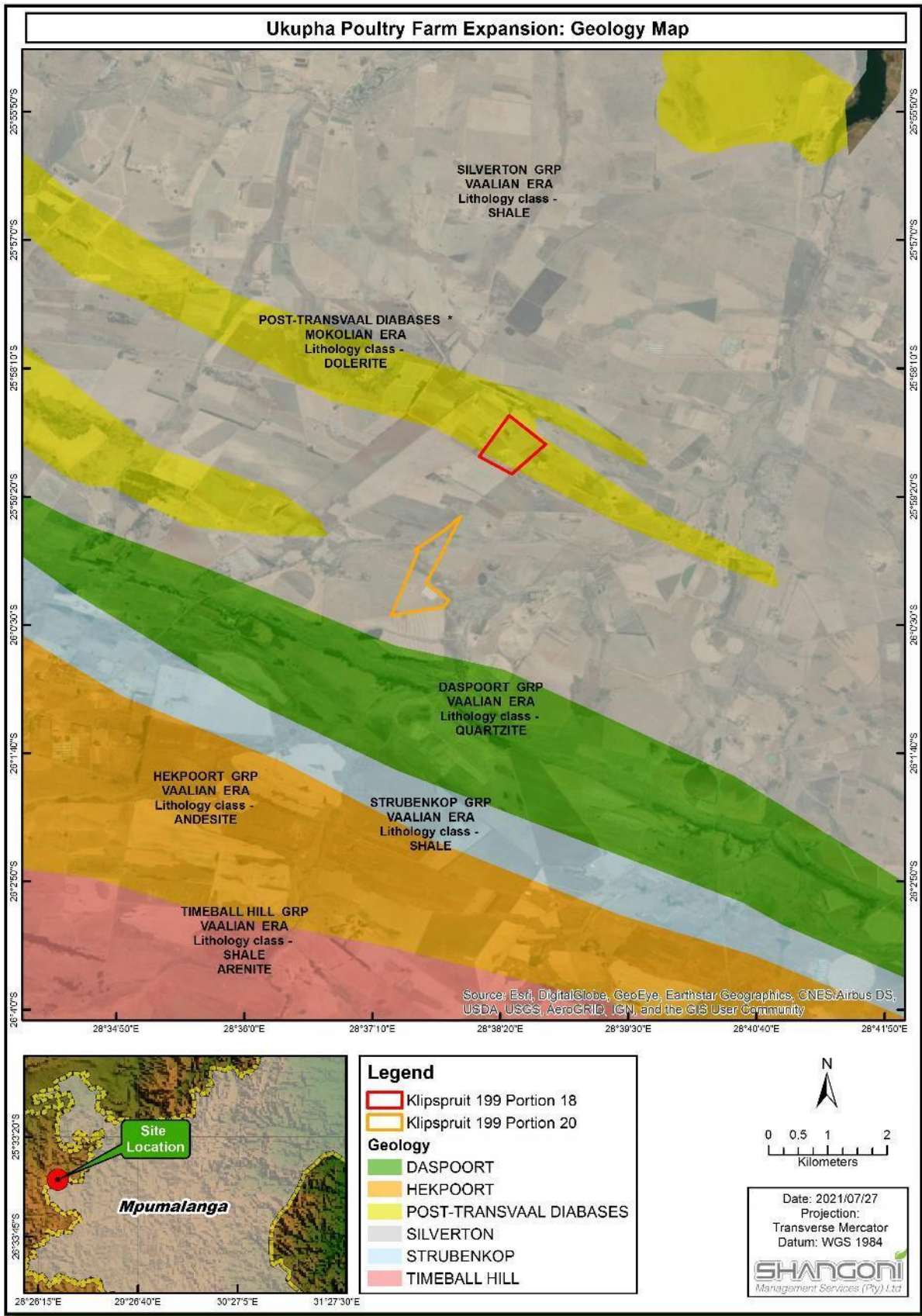


Figure 7: Geology Map



Chapter E: Flora

From a floral perspective the proposed project area is largely degraded. Both the Portions have sections where the habitat meets the NEMA definition of indigenous vegetation, albeit in a largely degraded condition. Overall, a total of 66 floral species were recorded across the study area, 24% of which were accounted for by Alien and Invasive Plant (“AIP”) species. The woody component was poorly represented, with mostly low shrubs or alien trees recorded on site. A lack of a well-defined woody component is expected for grasslands in this area. The forb component was the best represented component throughout the study area (53% of total species recorded); however, roughly 38% of the forb species were AIPs. Graminoids accounted for 41% of all species recorded, with the highest diversity associated with the Secondary Grassland Habitat Unit and the Moist Grassland Habitat Unit.

Moist Grassland and wetland habitat

Both of the sites are associated with floral species with an affinity for saturated, clay-rich soils, where there is either a permanent or temporary presence of water (Figure 8). Floristically, the Moist Grassland and the Wetland Habitat share many similar floral species; however, the Moist Grassland was generally more diverse (especially in terms of graminoids). Improved habitat integrity was, however, associated with the Wetland Habitat rather than the Moist Grassland Habitat. This is because the Moist Grassland has an increased presence of AIPs, several sections encroached by *Seriphium plumosum* (likely due to grazing pressures), and some sections have been cultivated historically (mostly hay farming). Both these habitat units further meet the definition of indigenous vegetation and floral composition is representative of typical wetland habitat



Figure 8: Moist Grassland: characterised by artificial ponding and a subsequent wet response



Figure 9: The Wetland Habitat is characterised by a UCVB wetland, with several obligate wetland floral species and a permanent presence of water



Secondary Grassland habitat

Within the project area, several sections meet this definition but due to varying stages of recovery (last cultivated in either 2011, 2014, or 2018) (Figure 10), the Secondary Grassland displays differently across the study area. Floristically the Secondary Grassland Habitat Unit was dominated by disturbance-loving grasses such as *Aristida congesta subsp. congesta*, *Cynodon dactylon*, *Eragrostis plana* and *Hyparrhenia hirta* and the forb component was almost entirely lacking. AIP species were patchily scattered throughout this habitat unit. The historic transformation of the Secondary Grasslands, together with current low diversity of floral species and the alteration of natural ecological drivers such as fire regimes and herbivory, has resulted in this habitat unit no longer being characterised as having a healthy mesic grassland community.



Figure 10: Some of the sections are well grasses as seen in the first photo and other areas are sparsely vegetated with several bare patches.

Transformed and Degraded Habitat

The vegetation, or lack thereof, was categorised under this habitat unit due to transformation to either infrastructure (roads and existing broiler houses), monocultures (cultivated fields) and/or homogenous fields dominated by stands of *Gomphocarpus fruticosus* (Figure 11). The floral communities no longer contain indigenous vegetation, nor do they resemble the reference state. Habitat integrity for this habitat unit is largely diminished.



Figure 11: Transformed habitat include areas where vegetation has been cleared for the construction of infrastructure (left), or for planting of cultivars (middle). Degraded Habitat include areas where vegetation has been impacted significantly and only a homogenous floral composition remains, such as stands of *Gomphocarpus fruticosus* (right).

No nationally threatened species of conservation concern (“SCC”) (i.e., Red data listed species (“RDL”) plants), in terms of the NEMBA Section 56(1), were observed during the site assessment, nor were any



species observed from the NEMBA Threatened or Protected Species (TOPS) list for the Mpumalanga Province.

Chapter F: Fauna

The faunal assemblages associated with the project area was low to moderately low within the Transformed and Degraded Habitat Unit, with the Secondary Grassland and Moist Grassland Habitat Units associated with moderately low to intermediately rich faunal assemblages – largely depending on the extent of habitat degradation and distance from either anthropogenic activities or the Wetland Habitat. Although not many faunal species were observed within the Wetland Habitat Unit at the time of assessment, there were several signs of faunal activity. The vegetation of the Wetland Habitat is suitable for providing the necessary habitat and food resources to support a variety of faunal species, including specialist species requiring moisture-rich wetland habitat, and is thus associated with moderately high faunal assemblage. As a whole the study area provides suitable habitat particularly for avifauna, general invertebrates, and small mammals. Due to the nature of habitat degradation, i.e., agricultural activities, the larger non-domestic mammals have long since been extirpated or moved out in search of better habitat and food resources beyond the boundaries of the study area.

Mammals

The only mammal species that were directly observed within the Secondary Grassland and Moist Grassland Habitat were domestic cattle, domestic goats and *Lepus saxatilis* (Scrub Hare). Within the Wetland Habitat, there was a sighting of *Redunca arundinum* (Southern Reedbuck). The Secondary Grassland Habitat is more likely to be used for foraging by mammal species and less likely for habitation (no burrows were noted on site), whereas the Wetland Habitat provides important breeding grounds for water dependant species and increased food resources whilst also serving as an important corridor for movement. Mammal species likely utilising habitat within the study area (especially within Portion 20) include *Leptailurus serval* (Serval), *Cynicta penicillata* (Yellow Mongoose), *Atilax paludinosus* (Marsh Mongoose), *Otomys* species (Vlei Rats), and *Sylvicapra grimmia* (Common Duiker). Given the habitat associated with the study area and the immediate surroundings, mammal diversity is largely restricted to a few common species, yet suitable habitat for rarer and specialist species (such as Serval) is available. *Aonyx capensis* (Cape clawless otter, Near Threatened), protected under the Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998), may also make use of the Wetland Habitat's shallow water with thick reed beds for foraging.

Avifauna

Avifauna were the best represented of the faunal classes, although perceived to be of moderate diversity. This is less likely to be a result of available habitat, but more so due to available food resources as the site assessment took place late autumn – more favourable to granivorous species which were well represented. During the summer months, with increased rainfall, the overall food resources for avifauna will increase as the herbaceous layer improves and insects become more abundant (an energy-rich source of food for various avifaunal species). Additionally, following recent harvesting of the croplands, little habitat is provided by the remaining barren landscape. Avifaunal diversity varied



between the Secondary and Moist Grasslands, Wetland Habitat and Transformed and Degraded habitat units. Avifauna were largely restricted to areas where natural vegetation occurred (Wetland and Grassland units), including species such as *Burhinus capensis* (Spotted Thick-knee), *Cisticola cf. chiniana* (Rattling Cisticola), *Euplectes orix* (Southern Red Bishop), *Macronyx capensis* (Cape Longclaw), *Oenanthe pileata* (Capped Wheatear), and *Vanellus armatus* (Blacksmith Lapwing). Only common species such as *Acridotheres tristis* (Common Myna), *Bostrychia hagedash* (Hadedda Ibis), *Columba livia* (Rock Pigeon) and *Corvus albus* (Pied Crow) were observed within Transformed areas. Raptors and smaller accipiter's were largely absent, but species such as *Buteo rufofuscus* (Jackal Buzzard) and *Elanus caeruleus* (Black Shouldered kite) will forage throughout the area.

Amphibians

The cryptic nature of many amphibian species makes them challenging to observe in the field (especially during assessments of limited duration) even when abundances are high. No amphibians were noted during the site assessment, but these species are anticipated to be present, especially species such as *Cacosternum boettgeri* (Common Caco) and *Amietia delalandii* (Common River Frog). The Wetland Habitat and adjacent grassland (both Moist Grassland and Secondary Grassland) provide suitable habitat and food resources for water dependant amphibian species. Amphibian activity is expected to be highest within the summer months when surface water and food resources (predominantly invertebrates) are highest, with activity and abundance declining in the winter months. No amphibian species or SCC were observed during the field assessment, however, there is suitable habitat for *Pyxicephalus adspersus* (Giant Bullfrog, Near Threatened), which has a distribution throughout most of the Mpumalanga. This species is known for its burrowing behaviour as it aestivates during the dry winter months, only re-appearing following heavy summer rains, making observations difficult. The Wetland Habitat and Grassland Habitats further provide the highest levels of habitat for reptile species, with only a limited number of species readily able to survive in the more anthropogenic dominated landscapes, notably skinks. Reptile diversity was low during the site assessment but will likely be higher during the summer months when more food resources become available and reptile activity increases.

Insects

Insects are capable of utilising a variety of habitats and readily inhabit transformed and altered habitats for short periods. From the site assessment it was evident that the wetland and grassland habitats were the most suitable for insect habitation, having the highest diversity and abundance. Food availability is considered moderately low to intermediate with the croplands providing seasonal food resources for herbivorous insects, whilst year-round food resources for such insects are available in the Wetland Habitat and, to a degree, the Grassland Habitats. In addition, the remaining natural areas, especially the Wetland Habitat, provide key breeding locations for insect species, ensuring a continued abundance in the study area which is key to supporting numerous other faunal classes and other insectivorous species. During the late autumn assessment, no *Leersia hexandra* (wetland grass) was confidently identified on site, but the Aquatic Specialists; report did make mention of this grass within the Moist Grassland and thus it is assumed likely that *Metisella meninx* (Marsh Sylph, Vulnerable) may occur.



Metisella meninx are generally associated with wetlands where grass such as Leersia hexandra are dominant as this plays a vital role in the reproductive cycle of the species (Roos and Henning, 2002). The intermediate insect diversity will likely only support an intermediate diversity of arachnids. Arachnid species are notoriously hard to detect over a relatively short period of time, which can often lead to the under estimation of diversity and abundance. Webs structures, most likely of the funnel webs and grass funnel-web spider family were observed within the Secondary Grassland Habitat Unit during the site assessment. Arachnids within the study area will likely be ground dwelling and hunting species such as those of the Family Agelenidae (Funnel-web Spiders) and or smaller plant dwelling species such as Thomisus spp (Crab Spiders).

Chapter G: Surface water

Ukupha is located in the primary catchments of the Olifants River and located in the quaternary catchment B20B

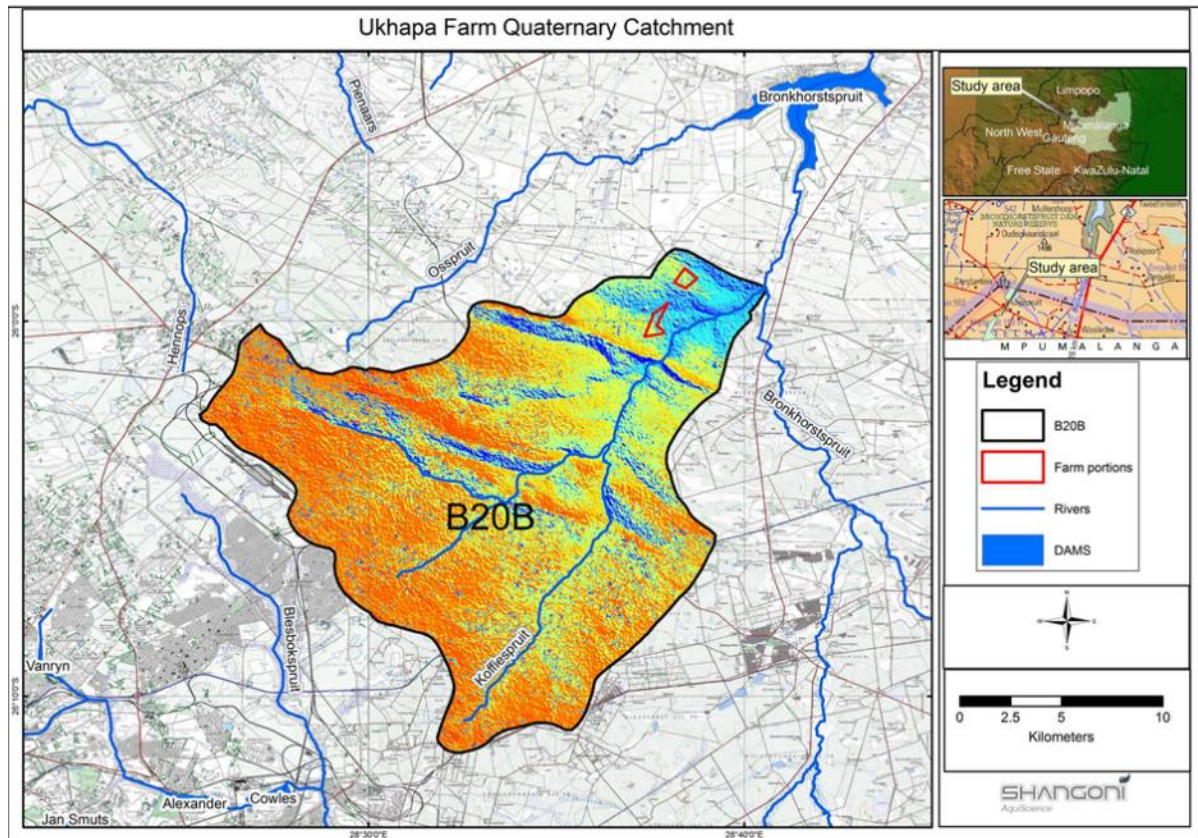


Figure 15) The applicable water management area (“WMA”) is the Olifants WMA and is the responsibility of the Mpumalanga regional DWS. Two relevant drainage lines were identified – i) the Koffiespruit which drains from a southern direction through the wider project area (east of Ukupha) until its confluence with Bronkhorstspuit, and ii) a small tributary of the Koffiespruit that drains through portion 20. Several wetlands are associated with this drainage line (Limosella, 2021).

Koffiespruit is located approximately 1.2 km east of portion 20 and 3 km east of portion 18. Bronkhorstspuit feeds the Bronkhorstspuit Dam, located approximately 10 km north of the project areas. Bronkhorstspuit Dam serves mainly the municipal and industrial water supply sectors.



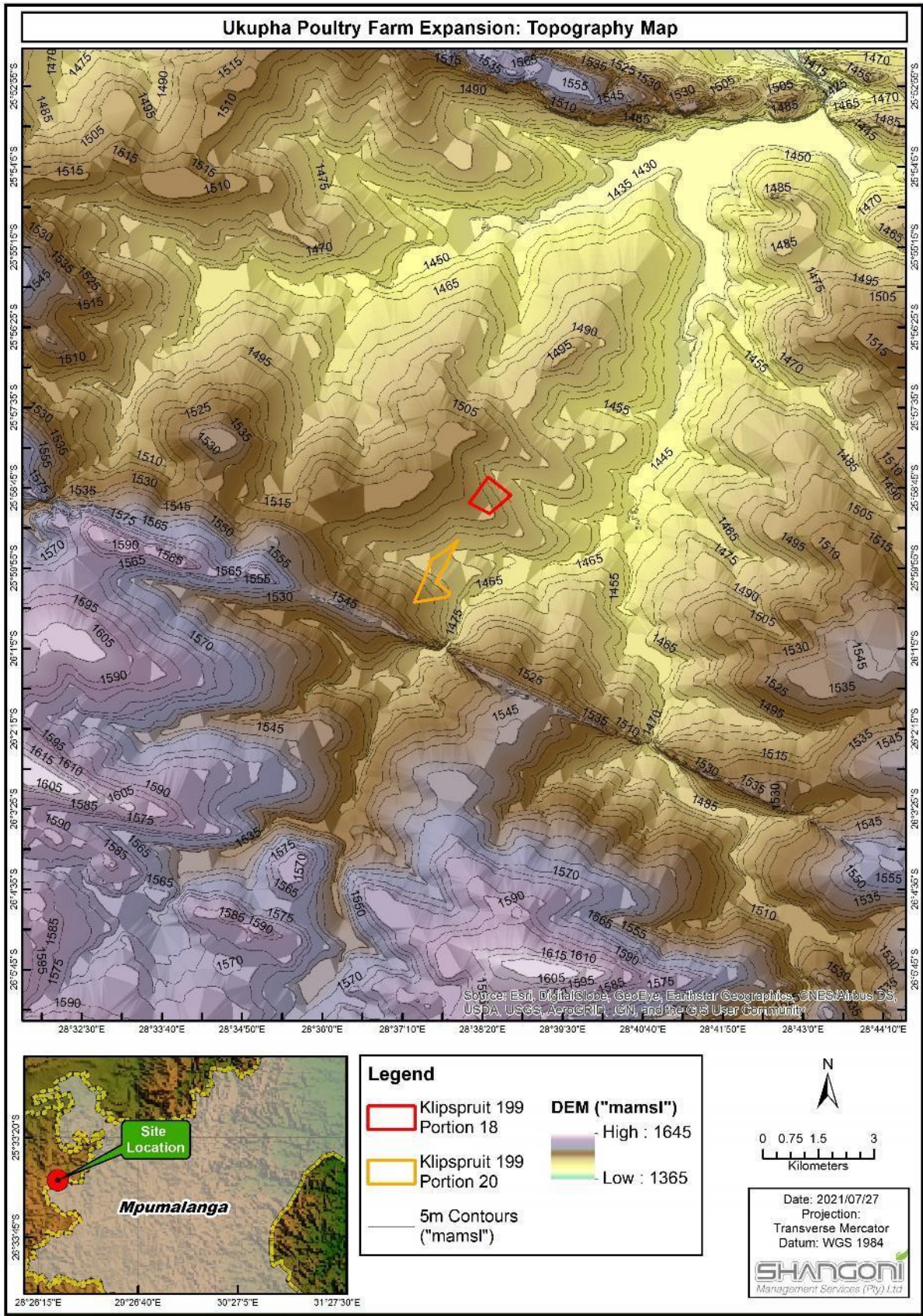


Figure 12: Topography map for the proposed project area.





Figure 13: Soil map for the proposed project



Chapter H: Groundwater

Hydrogeology

Groundwater occurrence favours weathered shale, brecciated joints and especially the contact zone between intrusive diabase sheets and shale. Good yielding boreholes occur more often in association with the surface water drainage systems of the broad valley bottoms. Groundwater rest levels occur between 10 and 25 metres below surface (“mbs”), although depths of up to 80 m have been recorded.

Changes in groundwater levels in boreholes penetrating this formation correlate well with rainfall and based on this an 8% recharge was calculated for this unit by Bredenkamp (1978). The general suitability of the groundwater for any use is indicated by the average EC value of 58 mS/m and a mean pH value of 7.6. Elements that show a substantial coefficient of variation are chloride and sulphate. The water is generally suitable for irrigation, livestock watering and domestic use.

Water quality

During the hydrocensus samples were taken from surveyed localities and analysed for chemical quality. Of the 15 surveyed points, only 14 were analysed. This included 5 boreholes owned by Ukupha and three (3) from privately owned boreholes located in a 1 km radius from portion 18 or portion 20.

An Expanded Durov diagram can be viewed in Figure 14.

Groundwater quality

Based on the groundwater quality data analysed during the hydrocensus:

- Groundwater is generally circum-neutral to slightly alkaline and non-saline.
- EC and TDS are generally in the low ranges and mineralisation of major cations and anions are also low to very low.
- For all groundwater sampled nitrate (NO_3) was recorded in low to medium levels but remain within domestic standards for long term use (SANS 241: 2015). Ammonium (NH_4) and phosphate (PO_4) are also low to undetected and well within SANS241 guidelines.
- Trace metal concentrations are low to undetected and well within the standards for drinking water.
- Fluoride (F) levels were mostly recorded as undetected.

All parameters analysed remain well within domestic standards.

Hydrogeochemical profiles

The Durov Diagram shows that all boreholes plot in fields 2 or 3 of the diagram. These groundwaters are typical of fresh, recently recharged water with Mg or Na dominated ions. They are dominated by bicarbonate alkalinity (HCO_3) and Mg and/or Na cations and indicate fresh unaffected water.



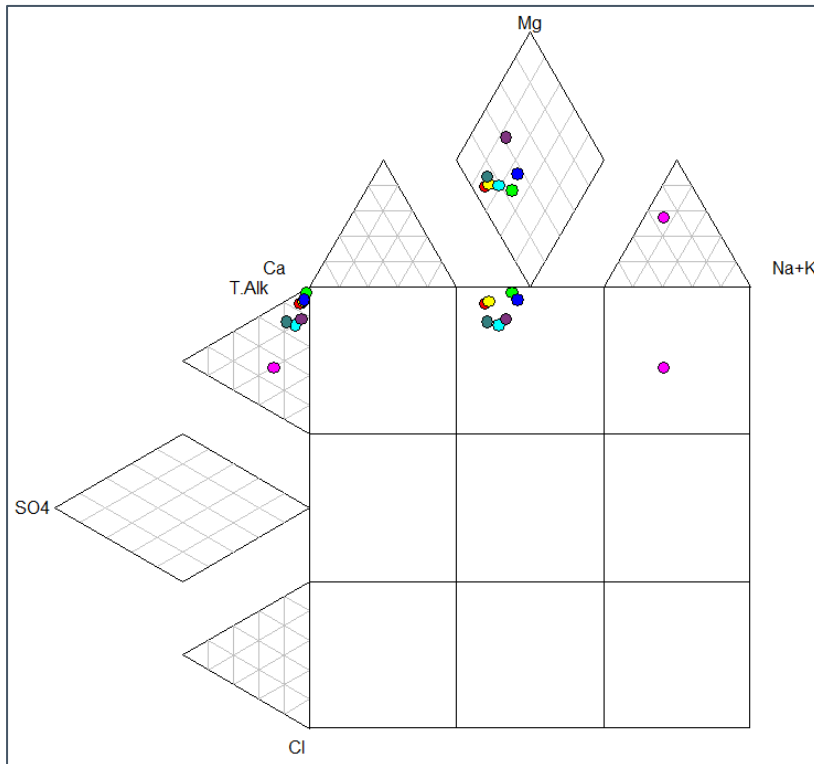


Figure 14: Expanded Durov diagram showing relative ratios in meq/l

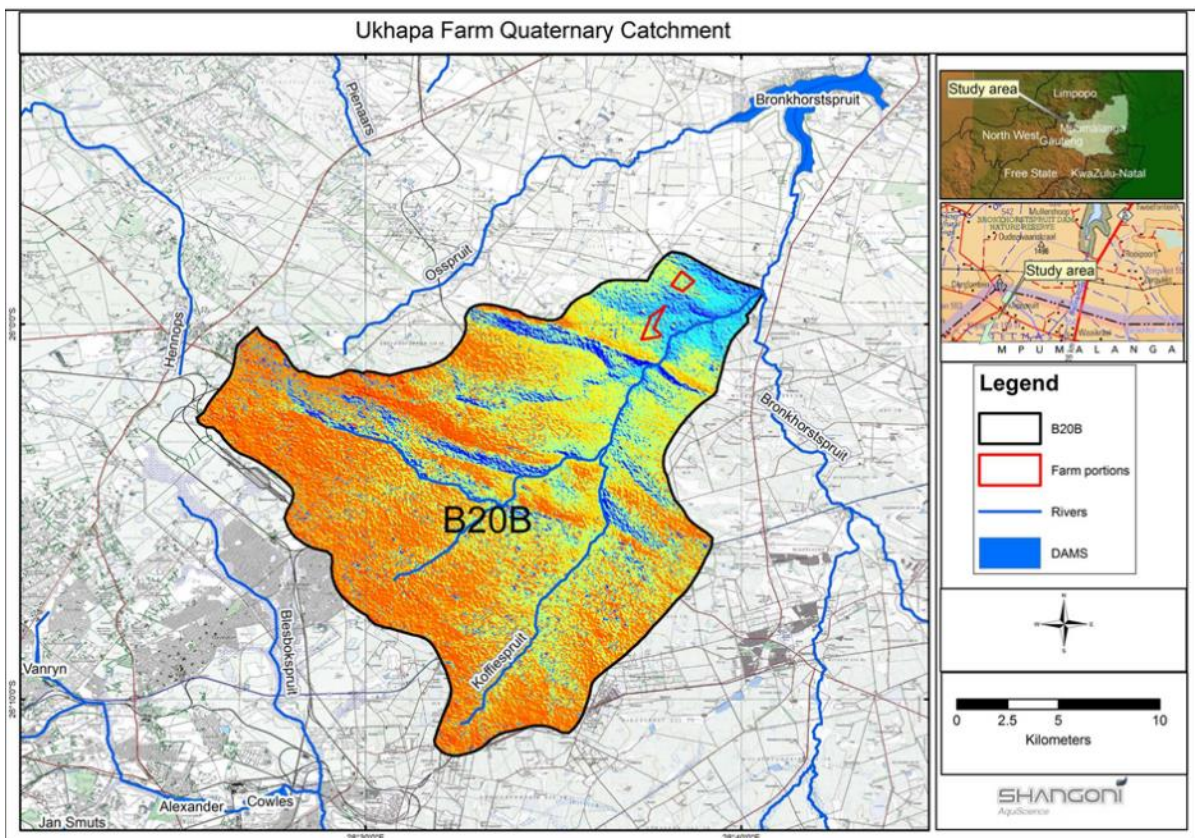


Figure 15: Quaternary catchment and topography (darker colours indicate higher lying areas and lighter colours lower lying areas)



Chapter I: Air Quality

The air quality in the area varies as a result of the air pollution originating from coal-fired power stations, local coal mines and associated production plants.

During winter months, the Highveld region also experiences a drop in air quality as a result of the occurrence of veldt fires. The proponent will need to carefully plan and create fire protection buffer strips during the early stages of the winter season to prevent such occurrences on the property.

During the site visit no notable odour could be observed associated with the existing operations.

Chapter J: Archaeology and Cultural History

A site walk-through of the proposed development was undertaken. The objective of the study was to identify possible archaeological, cultural and historic sites within the proposed development areas.

No obvious features, sites, graves or artefacts of cultural significance that would be impacted on by the proposed development were found.

Chapter K: Sensitive Landscapes

On portion 18 a small moderately modified seepage wetland was recorded with a large artificial impoundment which was dry during the time of the assessment. This seepage wetland drains north into an unnamed tributary of the Koffiespruit located east of the study site. This watercourse is referred to as the Koffiespruit and also as the Klipspruit River in available regional and national spatial datasets. The present condition of the wetland is likely to remain stable over the next 5 years. This wetland falls within the moderate category and is considered as an ecological important and sensitive area on a provincial or local scale.

On portion 20, three wetlands were recorded. An unchanneled valley bottom and associated hillslopes seepage wetland occupies much of the northern section of portion 20 while another seepage wetland draining east towards the Koffiespruit River only occupies a very small corner (south east corner). This seepage wetland lies adjacent to the existing poultry houses and a cleared area potentially earmarked for additional infrastructure.

The unchanneled valley bottom wetlands on portion 20 will likely remain stable over the following 5 years. The wetlands all fall into the Moderate Category: Wetlands in this category are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands is not usually sensitive to flow and habitat modifications. This type of wetland also plays a small role in moderating the quantity and quality of water in major rivers.

The seepage wetland is still largely natural with a few modifications. It is classified as an ecological important and sensitive area on a provincial or local scale.



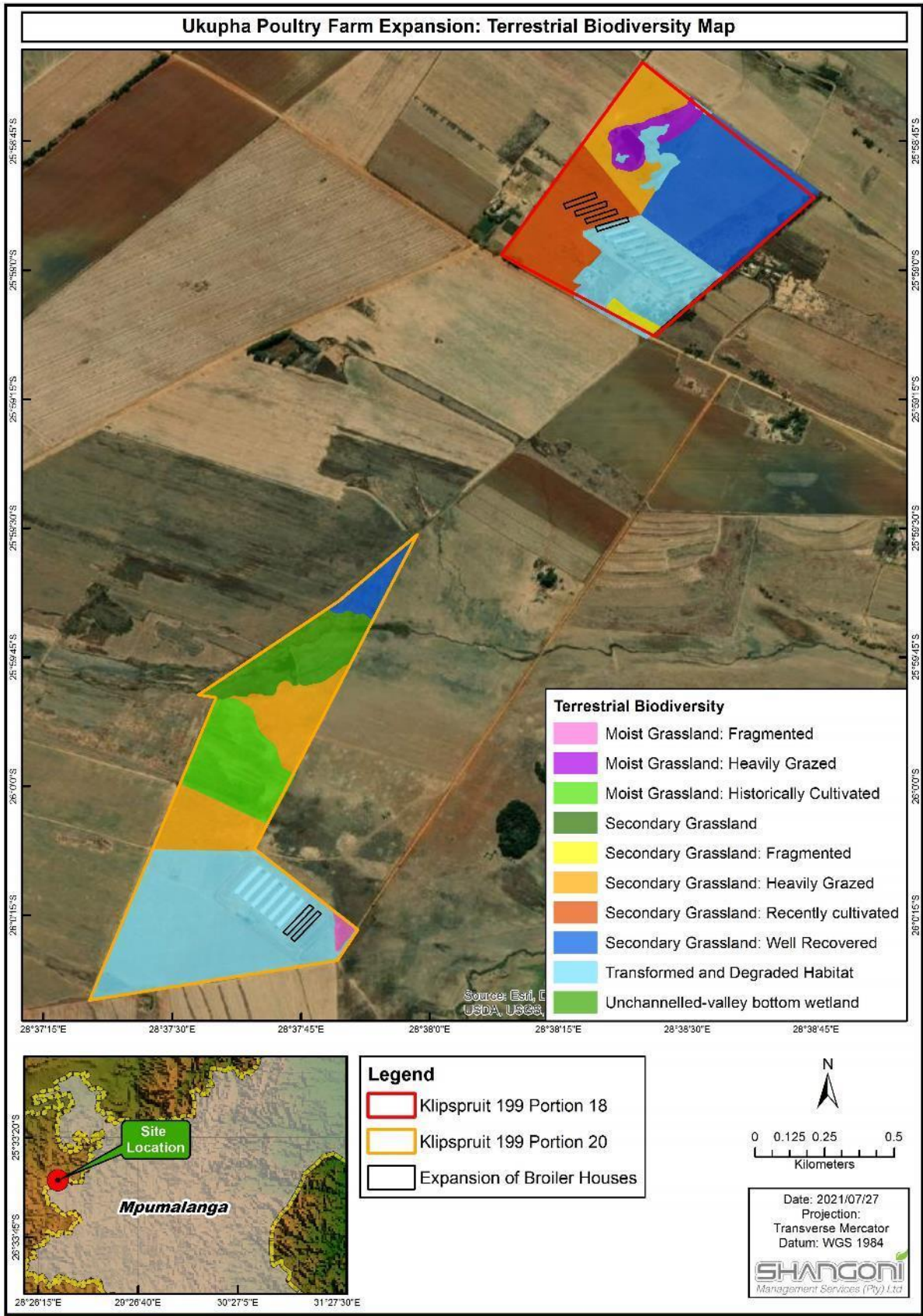


Figure 16: Terrestrial biodiversity map for the project area



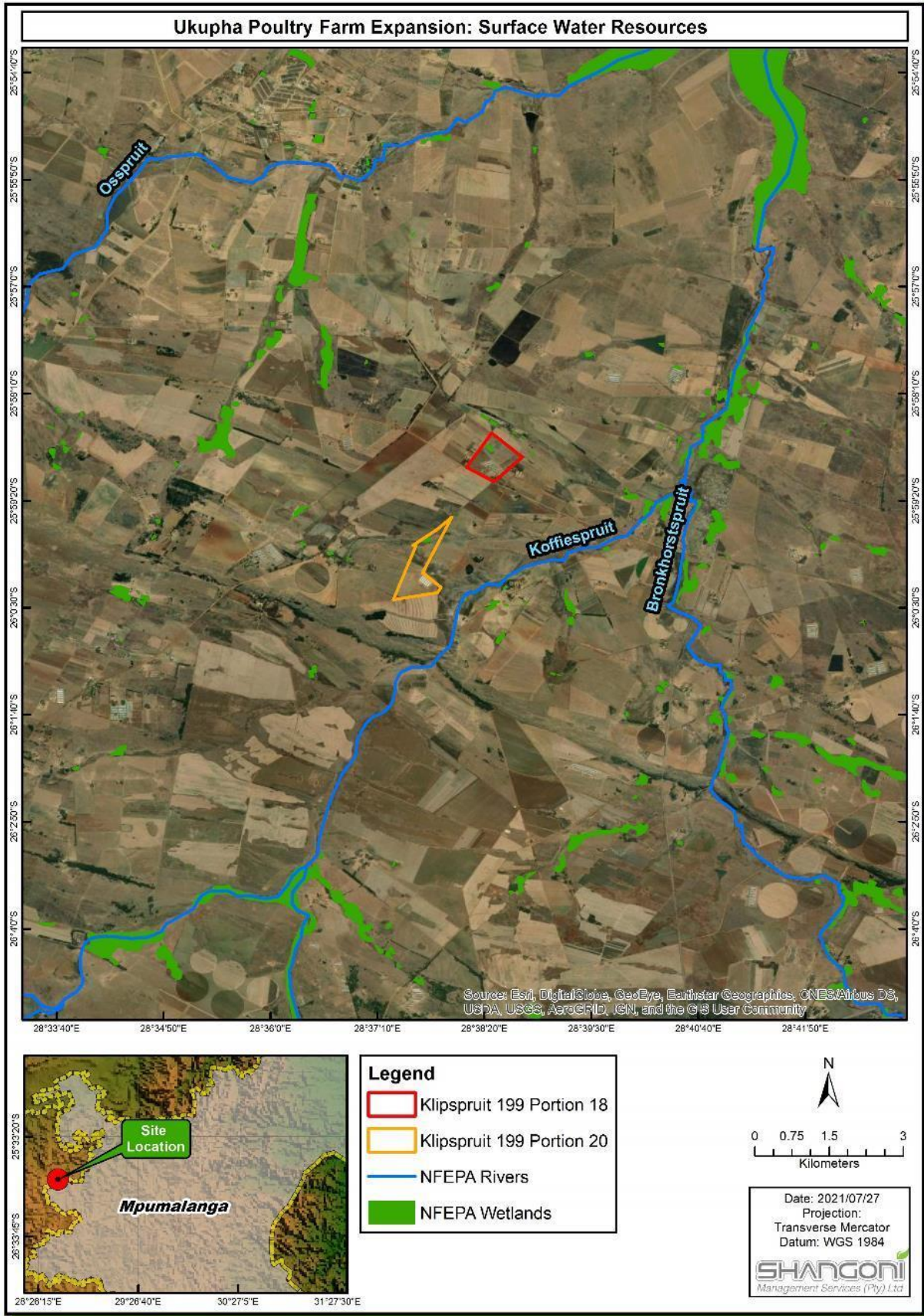


Figure 17: Surface water resources map associated within the project area.



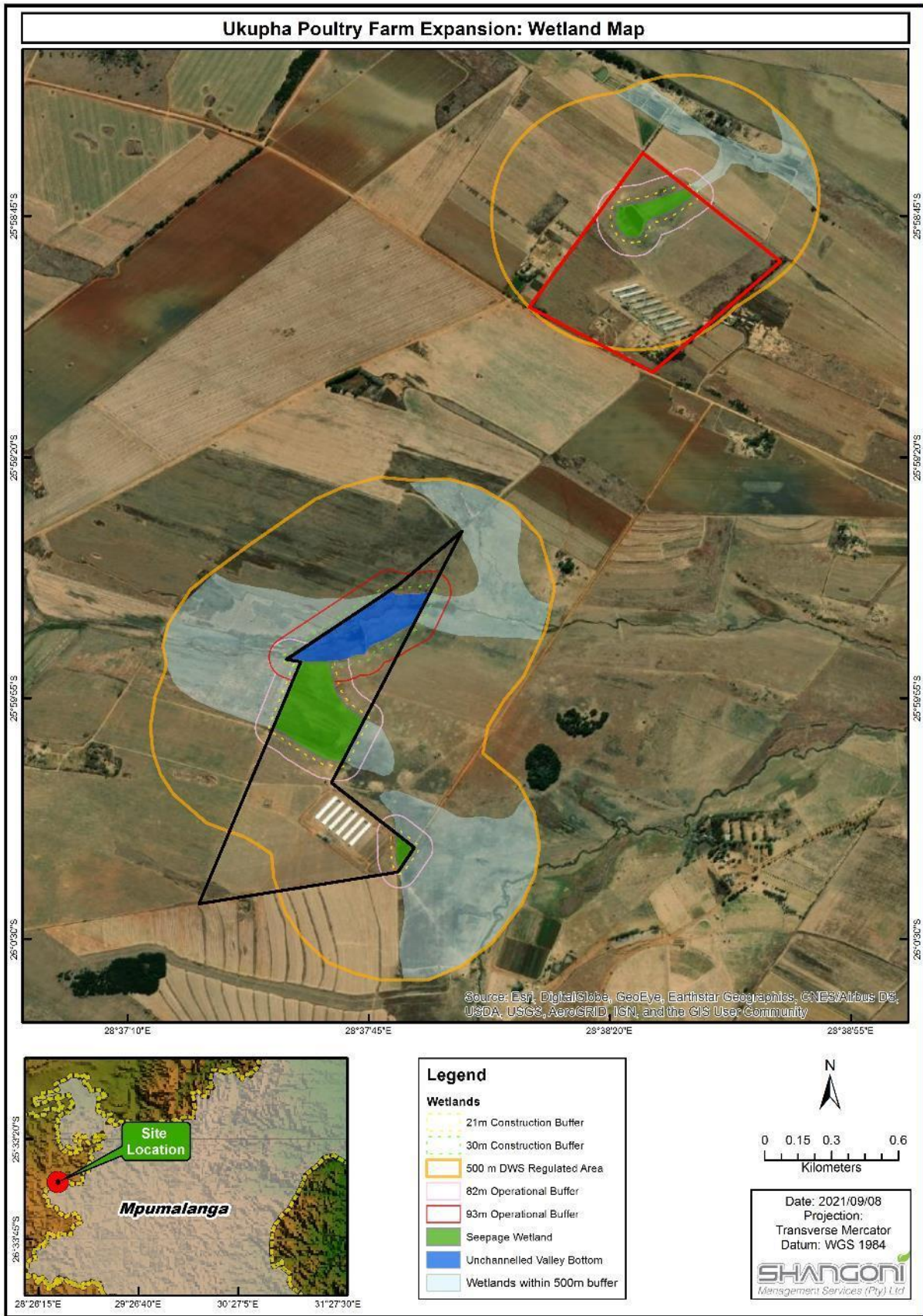


Figure 18: Wetland Map



Chapter L: Regional socio-economic structure

Demography

In 2019, the district had a total population size of 1.49 million people, constituting about 2.5% of South Africa's total population; and 33.4% of the total population in the Mpumalanga Province. It covers an area of approximately 16 899km² of land, with an annual population growth rate of 2% and density of 85.5 people per square kilometre. The district comprised of 440 000 households. This equates to an average annual growth rate of 2.96% in the number of households from 2009 to 2019. With an average annual growth rate of 1.96% in the total population, the average household size in the Nkangala District Municipality is by implication decreasing. There were 855 000 people living in poverty, using the upper poverty line definition, across Nkangala District in 2019 - this is 12.45% higher than the 761 000 in 2009. The percentage of people living in poverty has decreased from 61.85% in 2009 to 57.26% in 2019, which indicates a decrease of 4.59 percentage points. Major economic activities unemployment and employment

Social infrastructure

Infrastructure projects in excess of R 10 billion are currently (2019/20 FY) identified in the District, ranging from Human Settlements to Education and Roads and Transport, among others. The private sector, particularly the mining sectors, currently has infrastructure projects valued at more than R 467 million in the District.

Social development profile

The population trends and population growth directly and indirectly impact on the demand for services rendered by government. Ehlanzeni's population grew from 1 229 899 people in 2009 to 1 493 894 people in 2019. The population projection of Nkangala District Municipality shows an estimated average annual growth rate of 1.51% between 2019 and 2024. The average annual growth rate in the population over the forecasted period for Mpumalanga Province and South Africa is 1.30% and 1.35%, respectively, and is lower than that the average annual growth in the Nkangala District Municipality.

In 2019, the Nkangala District Municipality's population consisted of 88.95% Africa (1.33 million), 8.89% White (133 000), 1.18% Coloured (17 700) and 0.97% Asian (14 500) people.

Unemployment and employment

In 2019, there were 218 000 people unemployed in Nkangala, which is an increase of 86 400 from 132 000 in 2009. The total number of unemployed people within Nkangala constitutes 36.10% of the total number of unemployed people in Mpumalanga Province. The Nkangala District Municipality experienced an average annual increase of 5.18% in the number of unemployed people, which is better than that of the Mpumalanga Province which had an average annual increase in unemployment of 5.39%.

However, there are 358 000 people in employment within its district. The district that employs the highest number of people relative to the other districts within Mpumalanga Province is Ehlanzeni district municipality with a total number of 460 000. The district municipality that employs the lowest number of people relative to the other regions within Mpumalanga Province is Gert Sibande district municipality



with a total number of 328 000 employed people.

The economic sectors that recorded the largest number of employment in 2019 were the trade sector with a total of 63 200 employed people or 17.7% of total employment in the district municipality. The mining sector with a total of 61 800 (17.3%) employs the second highest number of people relative to the rest of the sectors. The electricity sector with 14 400 (4.0%) is the sector that employs the least number of people in Nkangala District Municipality, followed by the agriculture sector with 16 100 (4.5%) people employed.

7.4.2 Description of the current land uses

The proposed area is located within a rural area predominantly characterised by farming. The area surrounding portion 18 is currently being used for cattle grazing and previously used for extensive farming. The proposed area within portion 20 is dominated by pioneering grass species that re-established after the construction of the existing broiler houses. Other uses recorded on the proposed project site and surroundings include cattle farming and agriculture, specifically maize. The current poultry houses on both portions are fenced and well maintained.



7.5 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

Table 6: Preliminary determination of potential impacts

Environmental Component	Activity	Project site	Impact Description	Duration	Pre-mitigation ³			Reversible (Yes/No)	Irreplaceable Loss (Yes/No)	Avoided/Managed/Mitigated	Post Mitigation Significance.
					Probability	Magnitude	Significance				
Geology	Construction of broiler houses	Portion 18 and 20	There are no impacts identified to geology as a result of the project.								
Topography	Construction of broiler houses and reservoir	Portion 18 and 20	There are no negative impacts identified to topography as a result of the project as the proposed project area is described as a flat surface.								
Soils	Construction of broiler houses	Portion 18 and 20	During the construction of the broiler houses the clearance of vegetation will take place as well as the removal and stockpiling of topsoil. The topsoil has been previously disturbed by agricultural activities and natural grazing	Construction	2	2	L	No	No	Mitigate	L
			Soil erosion may occur as a result of vegetation clearance		2	2	L	Yes	No	Mitigate	L
			The movement of the construction vehicles can cause compaction of the soil, that could lead to lesser infiltration of rainwater and more runoffs can then lead to soil erosion.		1	2	L	Yes	No	Mitigate	L
	Construction of the reservoir	Portion 18 and 20	Topsoil will be removed to lay the foundation for the reservoir	1	1	L	Yes	No	Mitigate manage /	L	
Fauna and Flora	Construction of broiler houses	Portion 18 and 20	<ul style="list-style-type: none"> During the construction activities, there is a risk of alien and invasive species ("AIP species") proliferating in areas that are disturbed by the construction activities. AIP proliferation can extend to neighbouring habitat and can outcompete native floral species, thus displacing food resources for faunal species as a result. Dumping of construction material within areas where no construction is planned will lead to further disturbance of floral and faunal habitat – even contributing to the establishment and spread of AIPs. Potentially poorly managed edge effects, such as ineffective rehabilitation of compacted areas, bare soils, or eroded areas outside of the construction footprint, will result in ongoing proliferation of AIP species and subsequent loss of floral habitat and food resources for faunal species. Compaction of soils outside of the approved footprint area can occur if indiscriminate driving of construction vehicles through natural vegetation is not monitored. Loss of terrestrial habitat, and faunal and floral diversity. 	Construction	3	2	M	Yes	No	Manage Mitigate /	L
			<ul style="list-style-type: none"> Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential SCC. On-going disturbance of soils due to general operational activities may lead to altered floral habitat and loss of food resources for faunal species. Potential indiscriminate movement of vehicles and personnel through the terrestrial habitat, resulting in soil compaction and disturbance, which could result in increased habitat disturbance and the proliferation of alien floral species. 	Operational	3	3	M	Yes	No	Manage Mitigate /	L
	Construction of the reservoir	Portion 18 and 20.	The proposed area where the reservoir is going to be constructed, is an already disturbed area and will not have a significant impact on the fauna and flora.	Construction	1	1	L	Yes	No	Manage Mitigate /	L

³ H = High; M = Medium; L = Low



Environmental Component	Activity	Project site	Impact Description	Duration	Pre-mitigation ³			Reversible (Yes/No)	Irreplaceable Loss (Yes/No)	Avoided/Managed/Mitigated	Post Mitigation Significance.
					Probability	Magnitude	Significance				
Surface water	Construction of broiler houses	Portion 18 and 20.	<p><i>Changing the quantity and fluctuation properties of the watercourse</i></p> <ul style="list-style-type: none"> The compaction of soil, surface water redirection will change water flow energy and surface flow patterns Incising into the soil profile when installing services or building foundations will disrupt lateral water flow paths that will affect the discharge of water at downslope areas. Construction of infrastructure, including buildings and roads will result in sealed surfaces which will increase high energy water runoff causing downstream erosion. Vegetation clearance in the buffer zone of a wetland resulting in the loss of attenuation properties and an increase of silt load can occur. 	Construction and Operational	3	3	M	No	Yes	Mitigate; Manage	L
			<p><i>Changes in water quality due to foreign materials and increased nutrients</i></p> <ul style="list-style-type: none"> Discharge of poultry contaminants, solvents and/or other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the watercourse and a reduction in watercourse function. 		3	2	M	No	No	Mitigate; Manage	L
	Storage of coal on site		Potential impacts include deposition of wind-blown coal into the watercourses, leading to increase water temperature, altering microhabitats, and smothering vegetation.	Operational	3	2	L	Yes	No	Mitigate; Manage	L
Groundwater	Operation of Broiler houses.	Portion 18 and 20.	<ul style="list-style-type: none"> Water quality issues may frequently arise if a broiler facility is not managed properly. Improper management and disposal of carcasses as well as excess fodder, chemicals such as pesticides and any other operational waste may cause contamination of the local soils, nearby seep-lines and groundwater. Sensitive receptors include wetlands, streams and groundwater users. Runoff of nutrients can contribute to eutrophication of surface water, which may impair its downstream use. Nitrogen and phosphorus are the primary contributor to eutrophication in freshwater systems. Both NO₃ and NH₄ are water soluble, and thus, are transported in leachate and runoff. Viruses and other contagious pathogens are also prone to proliferate in unsanitary conditions. Coal is often associated with pyrite and in the presence of oxygen and water can cause acidic leachate which can liberate heavy metals into solution and contaminate groundwater if coal is not stored in an efficient manner 	Operational	4	4	H	Yes	No	Mitigate/ avoid	L
	Abstraction from BH0.4	Within the areas of portion 20 and possibly extending the boundary.	<ul style="list-style-type: none"> Depletion of a valuable resource (groundwater). Long-term and un-sustainable abstraction can result in depletion of groundwater from the abstracting aquifer at source and at other neighbouring users. Potential sensitive users include BH03 (also an abstraction borehole on portion 20), privately owned borehole H/BH02 and Koffiespruit (reduced baseflow). 	Operational	3	3	M	Yes	No	Mitigate / avoid	L
Air quality	Construction of broiler houses.		Excavation activities can have an impact on air quality as dust fallout will increase during the clearance of vegetation. There may be a chance that dust, and diesel fumes generated by machinery and vehicles could affect the air quality of the area.	Construction	2	2	L	Yes	No	Mitigate; Manage	L
	Operation of Broiler houses.	Portion 18 and 20.	Ukupha is currently burning a total of 68 tonnes of coal for the existing heating systems per cycle (33 days) during the winter months an additional 16 tonnes of coal will be burned during each cycle that will increase the total amount of carbon dioxide (CO ₂), to mention one of the compounds, into the atmosphere.	Operational	3	3	M	No	No	Mitigate; Manage	M
			The chicken litter (mixture of manure and bedding material) that will accumulate within the broiler houses, which will lead to ammonia that will be produced as a by-product of the microbial decomposition of the organic nitrogen compounds in manure.		2	2	L	No	No	Mitigate; Manage	L
During each cycle the amount of mortalities will increase that can lead to an increase of odour on site.	2	1	L		Yes	No	Mitigate; Manage	L			
Noise	Construction of broiler houses. and reservoir	Portion 18	Potential disturbance/nuisance to the adjacent farm (West side) and the warm workers courters (south western side) as a result of the increase in ambient noise from construction vehicles and machinery.	Construction	1	1	L	Yes	No	Mitigate; Manage	L
		Portion 20	There are no sensitive receptor's surrounding this Portion, therefore the chances that the noise generated from construction will have a significant impact on the area.		1	1	L	Yes	No	Mitigate; Manage	L



Environmental Component	Activity	Project site	Impact Description	Duration	Pre-mitigation ³			Reversible (Yes/No)	Irreplaceable Loss (Yes/No)	Avoided/Managed/Mitigated	Post Mitigation Significance.
					Probability	Magnitude	Significance				
Visual	Construction of broiler houses and the construction of a reservoir.	Portion 18 and 29	The construction of the broiler houses will have a minimum impact on the visual impact as this development is within an agricultural area and will therefore blend in with the already existing farming characteristics of the surrounding area.	Construction	1	1	L	Yes	No	Mitigate; Manage	L
Sensitive landscapes	Construction of broiler houses.	Portion 18	Vegetation clearance activities in the wetlands catchment may change the runoff characteristics in the wetlands catchment sedimentation, possible pollution and establishment of alien invasive species	Construction	2	2	L	No	No	Mitigate; Manage	L
	Storing of coal on site.		Potential impacts include deposition of wind-blown coal into the watercourses, leading to increase water temperature, altering microbiota microhabitats and smothering vegetation	Construction and Operational	2	2	L	No	No	Mitigate; Manage	L
	Construction of broiler houses.	Portion 20	Vegetation clearance within the wetland buffer zone may change the runoff characteristics in the wetlands catchment intercepting later water flow in the soil profile, sedimentation, possible pollution and establishment of alien invasive species.	Construction	4	3	H	No	Yes	Mitigate; Manage	M
			Earthwork activities including foundations adjacent to and within a wetland buffer zone		4	3	H	No	Yes	Mitigate; Manage	M
			The day-to-day function of the poultry farm, including access roads and the removal of waste within a wetland catchment. These activities have the potential to release these pollutants into the watercourse and causing regional pollution, wetland loss and changed hydrology of watercourses.	Operational	3	3	M	Yes	Yes	Mitigate; Manage	L
			Potential impacts include deposition of wind-blown coal dust into the watercourses, leading to increase water temperature, altering microbiota microhabitats and smothering vegetation		4	3	M	No	Yes	Mitigate; Manage	L
Archaeological and Cultural Importance	Construction of broiler houses.	Portion 18 and 20	No archaeological and cultural sites are within or near the proposed expansion location.								
Socio-economic	Construction of broiler houses.	Portion 18 and 20	The creation of employment and skills development in the area, resulting in social upliftment in the area.	Construction and Operational	Positive impact						
Land use and land capability	Construction of broiler houses.	Portion 18 and 20	The proposed locations for the expansion of the broiler houses are located within an already disturbed area. This is seen to be positive impact, due to the higher monetary income yield per surface area for the land to be used.	Operational	Positive impact						



7.6 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks

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, prediction 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 Figure 19 below for a model representing the above principle (as contained in the DWS's Best Practice Guideline: *G4 – Impact Prediction*).

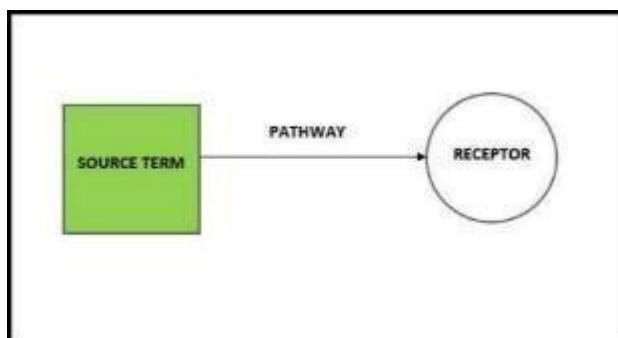


Figure 19 DWS's model for impact prediction (risk assessment).

Table 7 and Table 8 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 9 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 7 Determination of Probability of Impact.

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

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 8: Determination of severity of the impact.

Environmental Impact Rating / Priority					
Probability	Magnitude				
	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.



Table 9: Environmental impact assessment

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

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

7.7 The positive and negative impacts that the project (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

As previously discussed, no alternatives were identified. As provided in the table below, an assessment of the project as opposed to the no-go option was assessed.

Table 10: The advantages and disadvantages of the proposed project

Alternative	Advantages	Disadvantages
The project	Environmental: The proposed project area for the expansion of the broiler houses on Portion 18 will be	Environmental: The proposed area for the expansion on Portion



Alternative	Advantages	Disadvantages
	<p>constructed within an already disturbed area. The area for the proposed expansion on portion 20 has been previously prepped for construction; therefore, this area is already disturbed and the loss of vegetation is very low</p> <p>Technical/Engineer: Suitable for the area with less to no complications for the construction to occur. The location is next to the existing broilers on both sites.</p> <p>Economical: There will be six extra broiler houses constructed that will support economic growth and profitability.</p> <p>Social: Job creation, and additional socio-economic benefit to the community.</p>	<p>20 is within 82 m buffer of a wetland and may have an impact on the wetland located northeast of the proposed project area.</p> <p>Technical/Engineer: None identified.</p> <p>Economical: None identified.</p> <p>Social: There may be additional nuisance (noise and odour); a cumulative contribution to the current activities.</p>

No-go option: The proposed expansion project will not commence. This alternative would result in no additional environmental impacts on the site or the direct surrounding area; however, some of the disadvantages that will arise from this option include:

- No benefits will be derived from the implementation of an additional land use.
- The local economy will not benefit from the opportunities.
- The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised

The impacts associated with the proposed expansion project have been included under Section 7.5 of Part A, indicating that the risks associated with the construction of the broiler houses will be mostly low to medium.

7.8 The possible mitigation measures that could be applied and the level of risk.

Mitigation measures have been identified as provided under Part B (Environmental Management Programme report). Further thereto, I&AP comments received will be reviewed, and where relevant, mitigation measures included in the final Basic Assessment/EMPr Report.

7.9 Motivation where no alternative sites were considered.

No alternatives to the proposed project could be identified as the area required for the chicken houses are only suitable on the preferred site that will be next to the existing broilers and close to the existing infrastructure.

7.10 Statement motivating the alternative development location within the overall site.

Refer to Section 7.7 on the options as considered, and with no alternative sites considered as per Section 7.9. Impacts and significance thereof are discussed in Section 7.5, and an indication of the



extent to which the impact could be avoided or addressed by the adoption of mitigation measures. No significant risks associated with the project were identified post mitigation.

8 Assessment of each identified potentially significant impact and risk

Refer to Section 7.5 above for impacts assessment related to the project.

9 Summary of specialist reports

List of studies undertaken	Recommendations of specialist reports	Reference to applicable section of the report where specialist recommendations have been included.
Limnosella consulting (Pty) Ltd. June 2021. Proposed Ukupha Poultry Farm Expansion, Klipspruit, Delmas, Mpumalanga Province. Aquatic Biodiversity Assessment.	Biomonitoring should be conducted biannually during construction and operation phase. Water sampling must be completed weekly during construction and monthly during operational phase for select parameters.	Section 7.5 of Part A, and 1.4.4 of Part B.
Scientific Terrestrial services July 2021. Terrestrial Biodiversity Assessment as Part of The Environmental Authorisation Process for the Proposed Expansion of Broiler Houses on Portions 18 And 20 of The Farm Klipspruit 199 IR, Mpumalanga Province.	<ul style="list-style-type: none"> AIP control must be implemented as part of maintenance activities to prevent the spread of such species to neighbouring areas. AIP control should also be extended to the entire study area as NEMBA Section 73 requires every person to exercise a Duty of Care relating to invasive species within their property, and as such the landowner is responsible for AIP control (see also Section 4.3). It is recommended that grazing be regulated in areas where <i>Seriphium plumosum</i> has already encroached. <i>Seriphium plumosum</i> is an aromatic plant, yielding volatile oil that serves as a protective measure against herbivory, making the plant largely unpalatable for stock. As a result, the encroachment of <i>Seriphium plumosum</i> can lead to loss of grazing veld and subsequently the loss of floral habitat and diversity within the study area. All the natural areas outside of the authorised footprint must be demarcated as “no-go” areas to ensure no footprint creep takes place. 	Section 7.5 of Part A, and 1.4.4 of Part B.
1st phase H.I.A. The proposed expansion of broiler houses on Portions 18 and 20 of the farm Klipspruit 199 IR, Mpumalanga Province, South Africa	It is recommended that the proposed addition of 6 poultry houses to Portions 18 and 20 of the farm Klipspruit 199 IR may proceed as far as Act 25 of 199, The National Heritage Act, is concerned and documented in this report.	Section 7.5 of Part A, and 1.4.4 of Part B.



10 Environmental impact statement

10.1 Summary of the key findings of the environmental impact assessment

The methodology utilised to undertake the impact assessment has incorporated, amongst other skills, professional experience and specialists, relevant literature and local knowledge of the site and surrounding area.

It is the EAP’s opinion that based on the process that has been followed and the findings of the impact assessment, in conjunction with the proposed mitigation measures, that no unmanageable adverse impacts are expected to occur, and some positive impacts are expected.

11 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

Table 11: Summary of environmental impacts (negative), after mitigation.

Environmental Aspect	Significance Post Mitigation
Soil	
During the construction of the broiler houses and the reservoir the clearance of vegetation will take place as well as the removal and stockpiling of topsoil. The topsoil has been previously disturbed by agricultural activities and natural grazing	L
Soil erosion may occur as a result of vegetation clearance	
The movement of the construction vehicles can cause compaction of the soil, that could lead to lesser infiltration of rainwater and more runoffs can then lead to soil erosion.	
Fauna and flora	
<ul style="list-style-type: none"> • Loss of terrestrial habitat, and faunal and floral diversity. • During the construction activities, there is a risk of AIP species proliferating in areas that are disturbed by the construction activities. AIP proliferation can extend to neighbouring habitat and can outcompete native floral species, thus displacing food resources for faunal species as a result. Dumping of construction material within areas where no construction is planned will lead to further disturbance of floral and faunal habitat – even contributing to the establishment and spread of AIPs. Potentially poorly managed edge effects, such as ineffective rehabilitation of compacted areas, bare soils, or eroded areas outside of the construction footprint, will result in ongoing proliferation of AIP species and subsequent loss of floral habitat and food resources for faunal species. Compaction of soils outside of the approved footprint area can occur if indiscriminate driving of construction vehicles through natural vegetation is not monitored. • Clearing of vegetation will expose the soil, which in rainy events would wash through the water course causing sedimentation. • Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential SCC. • On-going disturbance of soils due to general operational activities may lead to altered floral habitat and loss of food resources for faunal species. Potential indiscriminate movement of vehicles and personnel through the terrestrial habitat, resulting in soil 	L



Environmental Aspect	Significance Post Mitigation
<p>compaction and disturbance, which could result in increased habitat disturbance and the proliferation of alien floral species.</p>	
<p>Surface water</p>	
<p><i>Surface water quality</i></p> <p>The compaction of soil, surface water redirection will change water flow energy and surface flow patterns.</p> <p>Incising into the soil profile when installing services or building foundations will disrupt lateral water flow paths that will affect the discharge of water at downslope areas.</p> <p>Construction of infrastructure, including buildings and roads will result in sealed surfaces which will increase high energy water runoff causing downstream erosion.</p> <p>Vegetation clearance in the buffer zone of a wetland resulting in the loss of attenuation properties and an increase of silt load can occur.</p> <p>Potential impacts include deposition of wind-blown coal into the watercourses, leading to increase water temperature, altering microhabitats and smothering vegetation.</p> <p><i>Water Quantity</i></p> <p>Discharge of poultry contaminants, solvents and/or other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the watercourse and a reduction in watercourse function</p>	<p>L</p>
<p>GROUNDWATER</p>	
<p>Water quality issues may frequently arise if a broiler facility is not managed properly. Improper management and disposal of carcasses as well as excess fodder, chemicals such as pesticides and any other operational waste may cause contamination of the local soils, nearby seep-lines and groundwater. Sensitive receptors include wetlands, streams and groundwater users.</p> <p>Runoff of nutrients can contribute to eutrophication of surface water, which may impair its downstream use. Nitrogen and phosphorus are the primary contributor to eutrophication in freshwater systems. Both NO₃ and NH₄ are water soluble, and thus, are transported in leachate and runoff.</p> <p>Viruses and other contagious pathogens are also prone to proliferate in unsanitary conditions.</p> <p>Coal is often associated with pyrite and in the presence of oxygen and water can cause acidic leachate which can liberate heavy metals into solution and contaminate groundwater if coal is not stored in an efficient manner</p>	<p>L</p>
<p>Depletion of a valuable resource (groundwater).</p> <p>Long-term and un-sustainable abstraction can result in depletion of groundwater from the abstracting aquifer at source and at other neighbouring users.</p> <p>Potential sensitive users include BH03 (also an abstraction borehole on portion 20), privately owned borehole H/BH02 and Koffiespruit (reduced baseflow).</p>	
<p>Air quality</p>	
<p>Excavation activities can have an impact on air quality as dust fallout will increase during the clearance of vegetation. There may be a chance that dust, and diesel fumes generated by machinery and vehicles could affect the air quality of the area.</p> <p>The chicken litter (mixture of manure and bedding material) that will accumulate within the broiler houses, which will lead to ammonia that will be produced as a by-product of the microbial decomposition of the organic nitrogen compounds in manure.</p>	<p>L</p>



Environmental Aspect	Significance Post Mitigation
Ukupha is currently burning a total of 68 tons of coal for the existing heating systems per cycle (33 days) during the winter months for the expansion project an additional 16 ton of coal will be burned, which increase the total amount of carbon dioxide (CO ₂), to mention one of the compounds, into the atmosphere.	M
The mortalities are currently stored in a freezer. Already appointed registered contractor will come and retrieve the chicken remains when the freezer is full.	L
NOISE	
Potential disturbance/nuisance to the adjacent farm (West side) as a result of the increase in ambient noise from construction vehicles and machinery. There are no houses surrounding this Portion, therefore there will be a very low chance the risk of impact as a result of noise generation during construction can be considered low. that the noise generated from the construction will have an impact on the area.	L
VISUAL ASPECTS	
The construction of the broiler houses will have a minimum impact on the visual impact as this development is within an agricultural area and will therefore blend in with the already existing farming characteristics of the surrounding area.	L
SENSITIVE LANDSCAPES (INCLUDING WETLANDS)	
Portion 18 Vegetation clearance activities in the wetlands catchment may change the runoff characteristics in the wetlands catchment sedimentation, possible pollution and establishment of alien invasive species Potential impacts include deposition of wind-blown coal into the watercourses, leading to increase water temperature, altering microbiota microhabitats and smothering vegetation	L
Portion 20 Vegetation clearance within the wetland buffer zone may change the runoff characteristics in the wetland's catchment intercepting later water flow in the soil profile, sedimentation, possible pollution and establishment of alien invasive species. Earthwork activities including foundations adjacent to and within a wetland buffer zone	M
The day-to-day function of the poultry farm, including access roads and the removal of waste within a wetland catchment. These activities have the potential to release these pollutants into the watercourse and causing regional pollution, wetland loss and changed hydrology of watercourses. Potential impacts include deposition of wind-blown coal dust into the watercourses, leading to increase water temperature, altering microbiota microhabitats and smothering vegetation	L

The proposed project will result in several positive impacts as provided below.

Table 12: Summary of significant environmental impacts (positive), after mitigation.

Environmental Aspect	Significance Post Mitigation
Economic and socio economic	
The creation of employment and skills development in the area, resulting in social upliftment in the area.	Positive
Land use and land capability	



Environmental Aspect	Significance Post Mitigation
The proposed locations for the expansion of the broiler houses are located within an already disturbed area. This is seen to be positive impact, due to the higher monetary income yield per surface area for the land to be used.	Positive

12 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, the table below summarises the impact management objectives and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Table 13: Impact management objectives and the impact management outcomes

Environmental Aspect	Objective	Summary of impact management outcome
Soil	To prevent major disturbances within the site area during construction.	The disturbance area for the construction will be kept at a minimum and in the designated areas as per the approved layout plans.
Flora and Fauna	Avoidable degradation and modification of the receiving environment, loss of floral habitat.	<p>Site clearance must be limited to the project footprint areas only, with disturbance limited as far as possible.</p> <p>As far as possible, existing roads are to be used for construction purposes.</p> <p>All soils compacted as a result of construction activities falling outside of development footprint areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas.</p> <p>All disturbed areas where work has been completed must be rehabilitated and alien vegetation must be controlled.</p>
Surface water	To prevent quality deterioration of surface water quality.	<p>To prevent the interruption or diversion of instream waterflow and manage soil erosion to minimize possible sediment that may enter the water course.</p> <p>During the detailed design phase, the footprint and design of structures should aim to have a nett positive impact on habitat quality and hydrology of the watercourse.</p>
Groundwater	To limit degeneration of groundwater quality and quantity.	<p>Prevent soil, surface- and groundwater pollution from unsanitary conditions onsite.</p> <p>Prevent resource depletion.</p>
Air Quality	Prevent the deterioration of air quality	Ukupha is currently burning coal to heat up the broiler houses. According to the National Environmental Management: Air Quality Act 39 OF 2004 Part 2 "The operation of small boilers must submit at least one emissions report per annum to



Environmental Aspect	Objective	Summary of impact management outcome
		<p>the relevant air quality officer.” For more detail refer to the EMPR in section B.</p> <p>Where possible, construction activities will take place outside of windy seasons.</p> <p>An complain register must be on site if any of the neighbouring farms have any complaints it can be logged in the register.</p>
Noise	To minimise the amount of noise generated during the construction phase of the proposed project.	Compliance with SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.
Visual aspects	To limit the visual impact of the proposes solar plant.	The construction of the broiler houses will have a minimum impact on the visual impact as this development is within an agricultural area and will therefore blend in with the already existing farming characteristics of the surrounding area.
Sensitive Landscapes (including wetlands)	Prevent impact to sensitive landscapes	<p>Infrastructure designs should consider soil properties, slopes and runoff energy with the aim of having a nett positive effect on the regional hydrograph. The footprint of construction activities should remain outside the calculated buffer zone.</p> <p>During the construction phase care should be taken to implement best practice, to not disturb any wetland habitat other than is absolutely necessary, to avoid compacting soil or allowing movement of vehicles or personnel to encroach onto the wetland apart from the demarcated works area</p> <p>Rehabilitation of the disturbed area should be done as informed by a suitably qualified ecologist.</p> <p>Ensure effective remediation and establishment of measures to ensure that the downstream hydrology is maintained.</p>
Sites of archaeological and cultural importance	Prevent the destruction of and loss of sites of cultural and archaeological importance.	No archaeological and cultural importance sites are within the proposed location for the expansion of the broiler houses.
Socio-economic aspects	Enhance the positive socio-economic impacts.	The expansion of the broiler house will contribute to food security, job creation and skills development in the area.

13 Aspects for inclusion as conditions of authorisation

Should the Department of Agriculture Rural Development, Land and Environmental affairs (“DARDLEA”) Mpumalanga Province grant authorisation for this project, it should be subject to the following conditions:

- The proposed project should remain in full compliance with the requirements of the BAR and with all regulatory requirements;



- The BAR should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the BAR. Such persons must be issued with a written mandate by management to provide guidance and instructions to employees and contractors; and
- Stakeholder engagement must be maintained during all phases of the proposed project.

14 Description of any assumptions, uncertainties and gaps in knowledge

In terms of the EIA Regulations GN R982 Appendix 1(3)(o), the Environmental Assessment Practitioner (“EAP”) must provide a description of any assumptions, uncertainties and gaps in knowledge upon which the impact assessment has been based. The table below provides the assumptions and limitations applicable to the aquatic Biodiversity and Wetland specialist assessment and the terrestrial biodiversity assessment.

Specialist	Assumptions and Limitations
<p>Limnosella consulting (Pty) Ltd. June 2021. Proposed Ukupha Poultry Farm Expansion, Klipspruit, Delmas, Mpumalanga Province. Aquatic Biodiversity Assessment.</p>	<ul style="list-style-type: none"> • The information provided by the client forms the basis of the planning and layouts discussed. • Although fieldwork was conducted in the beginning of the winter season and it is possible that not all species were visible, most plants could be identified through inflorescences. • All wetlands within 500 m and riparian areas within 100m of any developmental activities should be identified as per the DWS Water Use Licence Application regulations. Wetlands and riparian areas associated with the study sites were delineated on a fine scale based on detailed soil and vegetation sampling. Wetlands that fall outside of the site, but that fall within 500 m of the proposed activities were delineated based on desktop analysis of vegetation gradients visible from aerial imagery. • The detailed field study was conducted from a once off field trip and thus would not depict any seasonal variation in the macroinvertebrates or wetland plant species composition and richness. • The presence of heavy clay soils throughout the region together with uncharacteristically heavy rains made access to all sections of the site difficult. Observations were limited to accessible areas. • Description of the depth of the regional water table and geohydrological and hydrogeological processes falls outside the scope of the current assessment • Floodline calculations fall outside the scope of the current assessment • A Red Data scan, fauna and flora assessments were not included in the current study. • The recreation grade GPS used for wetland and riparian delineations is accurate to within five metres. • Wetland delineation plotted digitally may be offset by at least five metres to either side. Furthermore, it is important to note that, during the course of converting spatial data to final drawings, several steps in the process may



Specialist	Assumptions and Limitations
	<p>affect the accuracy of areas delineated in the current report. It is therefore suggested that the no-go areas identified in the current report be pegged in the field in collaboration with the surveyor for precise boundaries. The scale at which maps and drawings are presented in the current report may become distorted should they be reproduced by for example photocopying and printing.</p> <ul style="list-style-type: none"> In situ water quality was measured. No laboratory analysis was completed.
<p>Scientific Terrestrial services July 2021. Terrestrial Biodiversity Assessment as Part of The Environmental Authorisation Process for the Proposed Expansion of Broiler Houses on Portions 18 And 20 of The Farm Klipspruit 199 IR, Mpumalanga Province.</p>	<ul style="list-style-type: none"> The biodiversity assessment was confined to the study area and did not include the neighbouring and adjacent properties. Focused assessments were only on the proposed footprint of the additional broiler houses, with the remaining extent of the study area assessed on a high level to ascertain if any significant biodiversity features might be impacted beyond the footprint. Neighbouring and adjacent properties were considered as part of the desktop assessment. Sampling, by its nature, means that not all individuals are assessed and identified. Some species and taxa associated with the study area may have been missed during the assessment. With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. The field assessment was undertaken on 28th May 2021 (late autumn season), which falls outside of the flowering season for the area and falls outside of the recommended season (November and February) for vegetation assessments as per the Mpumalanga Parks and Tourism Agency’s (“MTPA”) minimum requirements for assessing and mitigating environmental impacts. A more comprehensive assessment would require that more than one assessment take place and that these assessments occur across all seasons of the year. However, given the good rains received in the area this year, the transformed and disturbed nature of the study area (largely agricultural fields), the small footprint of the proposed development, consultation of all relevant online sources and background information to improve on the overall understanding of the study area’s ecology, as well as extensive work experience in the area, it is not anticipated that any significant floral and/or vegetation aspects have been missed during the field assessment of 2021. Due to most faunal taxa’s nature and habits, it is unlikely that all species would have been observed during a field assessment of limited duration. Due to the locality of the study area (agricultural lands) and the cyclical nature of many species’ life stages, as well as the season of the assessment, very few faunal species were observed. As such, background data (desktop) and literature studies (previous work undertaken in the area) were used to further infer faunal species composition and sensitivities in relation to the available habitat.



Specialist	Assumptions and Limitations
	<ul style="list-style-type: none"> The data presented in this report are based on one site visit undertaken on the 28th of May 2021 (autumn season). A more comprehensive assessment would require that assessments take place in all seasons of the year. However, on-site data were augmented with all available desktop data. Together with project experience in the area, the findings of this assessment are considered an accurate reflection of the ecological characteristics of the study area. Some floral SCC identities will not be made known in this report, although their potential to occur on-site will still be assessed. As per the best practise guideline that accompanies the SANBI protocol and National Web-based Environmental Screening Tool (hereafter referred to as the “National Screening Tool”), the name of the certain sensitive species may not appear in the final Environmental Impact Assessment (“EIA”) report nor any of the specialist reports released into the public domain. It will be referred to as sensitive plants, and its threat status included, e.g., critically endangered sensitive plant.

15 Reasoned opinion as to whether the proposed activity should or should not be authorised

15.1 Reasons why the activity should be authorised or not

From the impact assessment undertaken, the only medium significant environmental impact that was identified is the expansion of the additional two broiler houses on Portion 20 that falls within the wetland buffer zone. Environmental authorisation was previously given for the construction of these houses on but the authorisation expired in 2015. The rest of the risks identified will have a low impact on the environment if the mitigation measures are adequately implemented and the project remains within the presented footprint for development.

In terms of collectively considering ecological, social and economic impacts, the EAP is of opinion that the project should be authorised, provided that the management objectives and management measures as presented in this BAR and EMP are implemented to effectively manage, prevent, control and / or stop environmental impacts from occurring.

15.2 Conditions that must be included in the authorisation

Refer to section 13, on conditions for inclusion in the authorisation.



16 Period for which the Environmental Authorisation is required

The construction of the proposed project will be undertaken for a period of 2 years from the date of approval provided by the competent authority, until the completion of the project. Whereafter, the activities will remain indefinitely.

17 Undertaking

The undertaking by the EAP is provided in Section 2 of Part B (Environmental Management Programme) below. This undertaking confirms: the correctness of the information provided in the reports, the inclusion of comments and inputs from stakeholders and I&APs (where received), the inclusion of inputs and recommendations from available specialist and monitoring reports, where relevant, and the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed.

18 Specific Information required by the competent Authority

18.1 Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the BAR report must include the:

18.1.1 Impact on the socio-economic conditions of any directly affected person.

Results of investigation, assessment and evaluation of impact on any directly affected person	Reference to where mitigation is reflected
Ukupha indicates that they strive to maintain a positive impact on the economic and socio-economic environment as the expansion of the broiler houses will contribute to food security, job creation and skills development in the area.	Part A Section 7.5

18.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

Results of investigation, assessment and evaluation of impact on any national estate	Reference to where mitigation is reflected
The project will have no impact on national estate (heritage resources) in terms of the Heritage Resources Act (Act 25 of 1999).	Part A Section 7.5



19 Other matters required in terms of sections 24(4)(a) and (b) of the Act.

No other matters were identified, as required in terms of sections (24(4)(a) and (b) of the Act.



PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME

REPORT

1 Draft environmental management programme

1.1 Description of the aspects of the activity

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme report is included in Part A, Section 7.5.

1.2 Details of the EAP

The requirements for the provision of the detail and expertise of the EAP are included in Part A, Section 1.2.



1.3 Impacts to be mitigated in their respective phases

Table 14 Measures to mitigate the impacts associated with the expansion of the broiler houses

Environmental Aspects	Activities	Phases	Scale of disturbances (Volumes, tonnage and hectares or m²)	Mitigation Measures	Compliance with standards	Time period for implementation
Geology	Construction of broiler houses.	of		The proposed activities associated with the solar plant and road upgrade are not anticipated to have an impact on Geology of the project area.		
Topography	Construction of the solar plant.			There are no negative impacts identified to topography as a result of the project as the proposed project area is described as a flat surface.		
Soils	Construction of broiler houses.	of Construction and operational	5 ha	<p>During the construction of the broiler houses the clearance of vegetation will be kept to a minimum and within the project footprint. The areas have been previously disturbed by agricultural activities and natural grazing.</p> <p>Soil erosion will be kept to a minimum while vegetation re-establish.</p> <p>Soil that has been contaminated by oil, grease or hydraulic fluid spills will be cleaned up by removing and disposing thereof in an appropriate waste disposal receptacle.</p> <p>The movement of the construction vehicles can cause compaction of the soil, that could lead to lesser infiltration of rainwater and more runoffs can then lead to soil erosion, therefor all the vehicle and equipment usage should be limited to designated areas only.</p>	In compliance with principles contained in the NEMA, 1998.	Construction and operational
Flora and Fauna	Construction of broiler houses Portion 18 and 20.	Construction	5 ha	<p>Site clearance must be limited to the project footprint areas only, with disturbance limited as far as possible.</p> <p>As far as possible, existing roads are to be used for construction purposes.</p> <p>All soils compacted as a result of construction activities falling outside of development footprint areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas.</p> <p>All disturbed areas where work has been completed must be rehabilitated and alien vegetation must be controlled.</p>	<p>General implementation of activities taking Biodiversity Guidelines into account.</p> <p>Development and implementation of Alien vegetation management plan.</p>	Construction and operational
		Operational		<p>All areas of natural vegetation falling outside of the direct footprint should be designated as No-Go areas and be off limits to all unauthorised construction vehicles and personnel.</p> <p>No dumping of waste on site should take place. As such it is advised that waste disposal containers and bins be provided during the construction phase for all rubble and general waste.</p> <p>If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder faunal rehabilitation later down the line. Spill kits should be kept on site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised preventing the ingress of hydrocarbons into the topsoil.</p> <p>No hunting/trapping or collecting of faunal or floral species is allowed.</p> <p>Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities. Additional road construction should be limited to what is necessary, and the footprint thereof kept to a minimal.</p> <p>Care should be taken during the construction and operation of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by:</p> <ul style="list-style-type: none"> • Demarcating all footprint areas during construction activities; • No construction rubble or cleared alien invasive species are to be disposed of outside of demarcated areas and should be taken to a registered waste disposal facility; • All soils compacted as a result of construction activities should be ripped and profiled and reseeded; and 		



Environmental Aspects	Activities	Phases	Scale of disturbances (Volumes, tonnage and hectares or m ²)	Mitigation Measures	Compliance with standards	Time period for implementation
				<ul style="list-style-type: none"> Alien vegetation control must be implemented, especially the Category 1b AIP species (as listed in the NEMBA Alien species lists, 2020), in line with the NEMBA Alien and Invasive Species Regulations (2020) (Section 4.3.2 of this report). Ongoing AIP monitoring and clearing/control should take place throughout the construction and operational phase of the development, and a 30 m buffer surrounding the footprint area should be regularly checked for AIP proliferation and to prevent spread into surrounding natural areas. <p>The construction process should be phased to limit the extent of exposed areas at any one time and ensure that the time between initial disturbance and completion of construction is as short as possible with rehabilitation occurring concurrently.</p>		
Surface Water	Construction of broiler houses.	Construction and operational	5 ha	<p>Control and attenuation in releases. The incorporation of phytoremediation into the design of attenuation structures must be investigated.</p> <p>Design of broiler houses should ensure no nett negative effect on local or regional hydrology</p> <p>Construction methods should be carefully reviewed to ensure the least impact to the watercourse is ensured.</p> <p>Effective stormwater management should be a priority during the construction phase. This should be monitored as part of the EMP. High energy stormwater input into the watercourses should be prevented at all costs.</p> <p>Sediment control should be effective and not allow any release of sediment pollution downstream. This should be audited on a weekly basis to demonstrate compliance with upstream conditions.</p> <p>Where necessary, corrective action should be determined by a team of specialists including engineers, hydrologists and ecologists.</p> <p>Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas.</p>	In line with the DWS Best Practice Guidelines and Regulations there under and amendments thereto	Construction
	Storage of coal on site.	Operational	600 m ²	Monitor for changes to the baseline integrity of watercourses		Operation
Groundwater	Operation of broiler facilities	Operational	5 ha	<p>The use of pesticides should be monitored and controlled such that it does not pollute the surface and groundwater.</p> <p>The disposal of chicken carcasses, feed and excrement should be properly disposed of.</p> <p>Environmental contamination can be avoided by ensuring that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the environment.</p> <p>General waste and hazardous waste should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate.</p> <p>Waste storage site should be constructed with concrete, block work and earth to avoid contamination into the soil or groundwater.</p> <p>Chicken Manure should be stored in sufficient waste bags and skips (or similar). Bags and skips should be covered with suitable material and correctly labelled.</p> <p>Chicken manure should be removed every 6 weeks.</p> <p>Coal to be stored on cement slab or similar low permeable material to limit groundwater infiltration of leachate.</p>	In line with the DWS Best Practice Guidelines and Regulations there under and amendments thereto	Operation
	Groundwater abstraction from BH04	Operation	5 ha	<p>Do not pump more than what the sustainable yield allows.</p> <p>Limit well interference (with borehole BH03), reduced yield of neighbouring boreholes and reduced baseflow to the Koffiespruit/wetlands, by not pumping continuously for more than 10 days.</p>		Operation



Environmental Aspects	Activities	Phases	Scale of disturbances (Volumes, tonnage and hectares or m ²)	Mitigation Measures	Compliance with standards	Time period for implementation
				Allow for full recovery after pumping period before pumping continues.		
Wetlands	Construction of broiler houses Portion 18 and 20.	Construction	5 ha	<p>Provision of adequate sanitation facilities located outside of the watercourse/riparian area or its associated buffer zone.</p> <p>Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.</p> <p>The development footprint must be fenced off from the watercourse and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc.</p> <p>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.</p> <p>Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer.</p>	In line with the DWS Best Practice Guidelines, and Regulations there under and amendments thereto.	Construction
	Construction of broiler houses Portion 18 and 20.	Operational	5 ha	<p>Ensure that no operational activities impact on the downstream watercourse or buffer area. This includes edge effects.</p> <p>Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. Backup systems must be in place to ensure that no pollution spills occur should infrastructure fail.</p>		Operational
	Storage of coal on site.	Operational	600 m ²	Regular independent water quality monitoring should form part of operational procedures in order to identify pollution.		
Air quality	Construction of broiler houses Portion 18 and 20.	Construction and operational	5 ha	<p>Dust suppression along the gravel road, and other disturbed areas.</p> <p>Effective maintenance of diesel driven vehicles to manage the greenhouse gases.</p>	Dust suppressing methods to reduce dust to comply with the Dust Control Regulations GNR 827 of 2013 and NEM: AQA, 2004.	Construction
	Burning of coal for the heating systems.	Operational	84 tons	<p>Ukupha is currently burning coal for heating up the broiler, according to the National Environmental Management: Air Quality Act 39 OF 2004 Part 2 <i>The operation of small boilers must submit at least one emissions report per annum to the relevant air quality officer.</i></p> <p>Part 3 no 5: Particulate matter ("PM") must have a limited value of 250 dry mg/ Nm³ at 273K; 101.3kPa and 10% O₂ and sulphur dioxide (SO₂) with a limited value of 1000 dry mg/ Nm³ at 273K; 101.3kPa and 10% O₂.</p> <p>Chicken litter (mixture of manure and bedding material) is currently being removed by a registered contractor after every cycle (33 days).</p> <p>The mortalities must be disposed of in a sealed container and be collected by a registered contractor for further handling.</p> <p>A complaints register must be kept on site</p>		
Noise	Construction of broiler houses Portion 18 and 20.	Construction	5 ha	<p>All equipment and vehicles must be regularly serviced to prevent excessive noise. Vehicles and equipment generating excessive noise should be fitted with appropriate noise abatement measures.</p> <p>Personal Protective Equipment ("PPE") must be worn at all times during construction of the proposed activities. PPE register to be kept.</p>	<p>SABS Code of Practice 0103 of 2008: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication.</p> <p>SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.</p>	Construction
Visual	Construction of broiler houses Portion 18 and 20.	Construction and operational	5 ha	Remove inoperative equipment and maintain good housekeeping.	The expansion of the broiler houses will contribute to the food security in the area and social development.	Construction and operational



Environmental Aspects	Activities	Phases	Scale of disturbances (Volumes, tonnage and hectares or m ²)	Mitigation Measures	Compliance with standards	Time period for implementation
Sites of Archaeological and Cultural Importance	Construction of broiler houses Portion 18 and 20.	Construction	5 ha	<p>If any palaeontological material is exposed during construction activities, all construction activities must cease, a 30 m no-go barrier constructed and SAHRA contacted for further investigation.</p> <p>The area should be demarcated in order to prevent any further work there until an investigation has been completed.</p> <p>An archaeologist should be contacted immediately to provide advice on the matter.</p>	In compliance with the National Heritage Resources Act (Act No. 25 of 1999)	Construction
Socio-economic	Construction of broiler houses Portion 18 and 20.	Construction and operational	Local and regional	<p>Where possible, skilled and unskilled workers, should be sourced from the local communities, towns and surrounding areas.</p> <p>Implementation of development training will help low-skilled labourers to get experience and advance skills, thus be able to work within this sector.</p>	Continued implementation of approved Social and Labour Plan.	Construction and operational



1.4 Indicate the frequency of the submission of the performance assessment/ environmental audit report.

Unless otherwise instructed by the Competent Authority (in this case, DARDLEA) or as a condition to the authorisation / EMPr approval, an environmental audit should be conducted on an annual basis and submitted to the DARDLEA.

1.5 Environmental Awareness Plan

Ukupha Farming will appoint an environmental control officer (“ECO”), if required by the Competent Authority (DARDLEA) for the construction stage of the project.

The following objectives are set for the standard environmental awareness course:

- To identify environmental training and development needs before the construction of the broiler houses; and
- To clarify the environmental management system (“EMS”) training and to ensure that all employees and appointed contractors are correctly instructed with regards to the environment.

1.6 Specific information required by the Competent Authority

The following information will be required by the competent authority.

Information	Frequency of submission
Environmental Audit Report on approved BAR and EMPr.	Annually or as per auditing timeframe indicated in the authorisation.



2 Undertaking

The EAP herewith confirms

- the correctness of the information provided in the reports
- the inclusion of comments and inputs from stakeholders and I&APs ;
- the inclusion of inputs and recommendations from the specialist reports where relevant; and
- the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed;

Signature of EAP

Date

3 Declaration of independence

Shangoni hereby declares that it is an independent auditor in that it has no business, financial, personal or other interest in this project in respect of which Shangoni is appointed. Furthermore, no circumstances exist that may compromise the objectivity of Shangoni, excluding fair remuneration for work performed in connection with this project.

Report compiled **DRAFT FOR REVIEW**
by:

Lesley Keay

Report reviewed by: **DRAFT FOR REVIEW**

Brian Hayes (Pr Eng)

Ashley Miller

