FINAL BASIC ASSESSMENT REPORT

APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION FOR

THE PROPOSED DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND HYDROPOWER-ASSISTED IRRIGATION SYSTEM ON AGRICULTURAL LAND ADJACENT TO THE SUIKERBOSRAND RIVER

Binneplaas Boerdery

Portion 9 of the Farm Uitvlugt 434 IR

Cooperville Agricultural Holdings

Midvaal Local Municipality

Gauteng Province

REF NR: 002/26-27/E0011

Zantow Report No: 4301-ZANBB-2026 (F)

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EXECUTIVE SUMMARY

Application for Environmental Authorisation for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and a Hydropower-Assisted Irrigation System on Agricultural Land adjacent to the Suikerbosrand River

This Basic Assessment Report has been prepared in support of an application for Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014, as amended. The application relates to the proposed development of cascading off-channel balancing dams, associated river abstraction infrastructure and a hydropower-assisted irrigation system on agricultural land located on Portion 9 of the farm Uitvlugt 434 IR, Cooperville Agricultural Holdings, Gauteng Province.

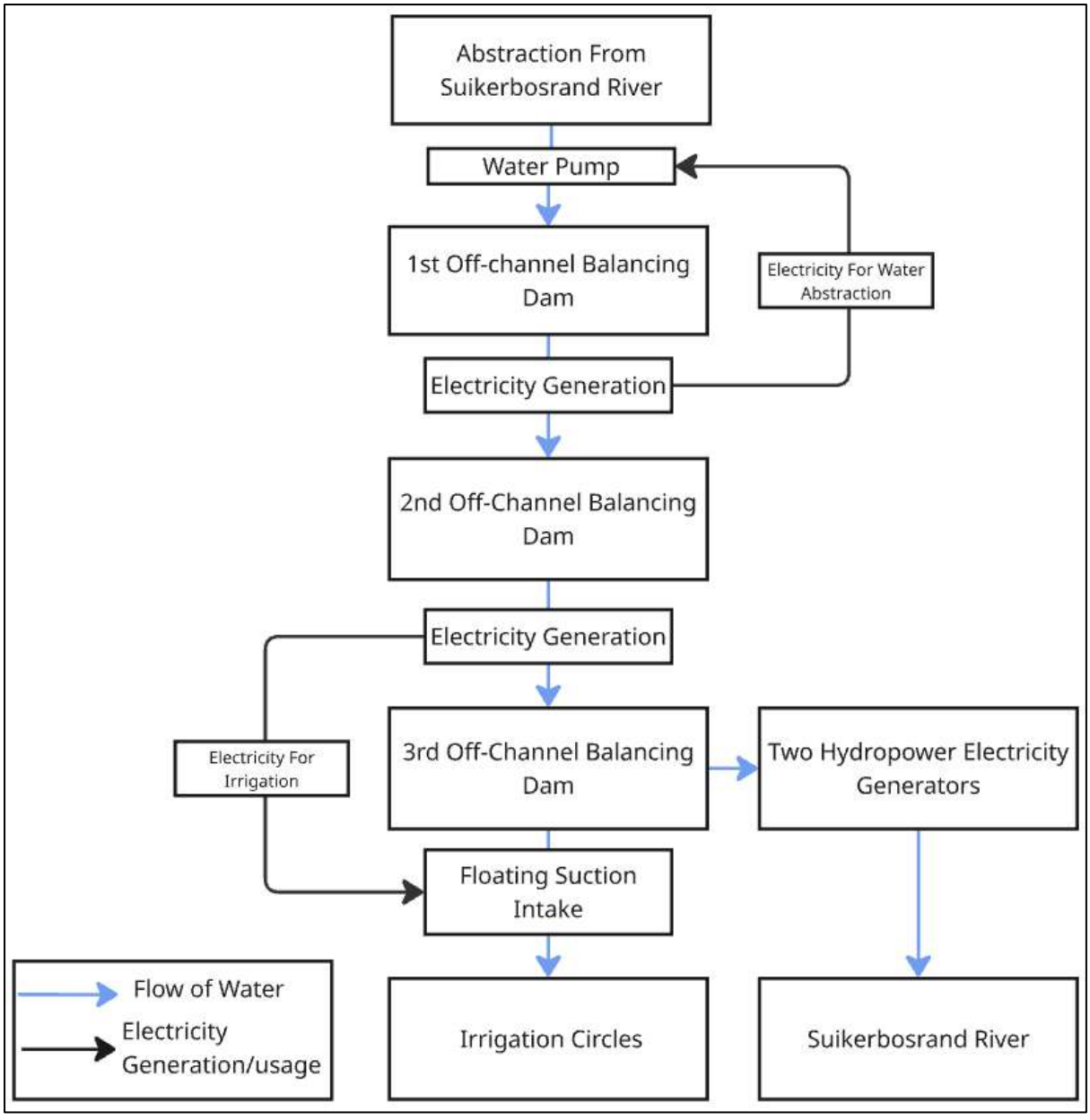


Figure 1: Process Flow

The purpose of the proposed development is to improve the reliability, efficiency and sustainability of the existing agricultural irrigation system on the property. The property is already used for agricultural purposes, and the proposed infrastructure is intended to support the continuation and optimisation of that existing agricultural use. The project will provide improved off-channel storage, better irrigation scheduling, improved water distribution and a renewable-energy / energy-recovery component linked to the movement of water through the system.

The application must be understood in the context of the existing registered agricultural water use on the property. A Registration Certificate issued by the former Department of Water Affairs and Forestry in terms of the National Water Act, 1998 confirms a registered water use for Portion 9 of the farm Uitvlugt 434 IR within the Upper Vaal Water Management Area. The certificate records a section 21(a) water use for the taking of water from a water resource for the sector “Agriculture: Irrigation”. The water resource is identified as the Suikerboschrand River, with the source recorded as river / stream. The registered annual abstraction volume for irrigation is 820 740 m³ per annum, effective from 1 April 2002. The certificate also records a separate registered borehole use for livestock watering of 730 m³ per annum.

The existing abstraction point, pumps and associated irrigation infrastructure have therefore historically formed part of the agricultural operation on the property. The proposal does not represent the establishment of an unrelated new water-use activity on an unused property. Rather, it involves the improvement and optimisation of an existing agricultural water-use system through the addition of off-channel balancing storage and hydropower-assisted irrigation infrastructure. The existing registered abstraction remains relevant to the assessment because it demonstrates that water abstraction for agricultural irrigation has been part of the property’s lawful water-use context for many years.

The proposed development will comprise three lined, off-channel balancing dam compartments with associated pipelines, outlet infrastructure, spillways, pump infrastructure and hydropower-assisted irrigation components. The dams will be located outside the Suikerbosrand River channel and outside the defined watercourse area. Water abstracted in accordance with the applicable lawful water-use entitlement and/or Water Use Licence requirements will be pumped to the off-channel balancing dam system and stored temporarily for irrigation management purposes.

A detailed design report prepared by PG Consulting Engineers confirms that the proposed dam will be a lined, off-channel water storage facility consisting of three separate compartments. The three-compartment design was selected in response to the natural topography of the site and to ensure that the maximum dam-wall height remains below 5 metres. The proposed dam will be lined with a 1.5 mm HDPE geomembrane liner.

The design capacity and dimensions of the dam system can be summarised as follows. Compartment 1 will have a storage capacity of approximately 8 653 m³ to 10 764 m³, depending on the design level referenced, with a maximum wall height of 2.8 m. Compartment 2 will have a storage capacity of approximately 43 409 m³ to 49 459 m³, with a maximum wall height of 4.9 m. Compartment 3 will have a storage capacity of approximately 55 914 m³ to 61 909 m³, with a maximum wall height of 4.9 m. The combined design capacity of the off-channel balancing dam system is approximately 107 976 m³. The

total water surface area at full supply level is approximately 27 618 m², equivalent to approximately 2.76 hectares, and the overall dam footprint is approximately 3.2 hectares.

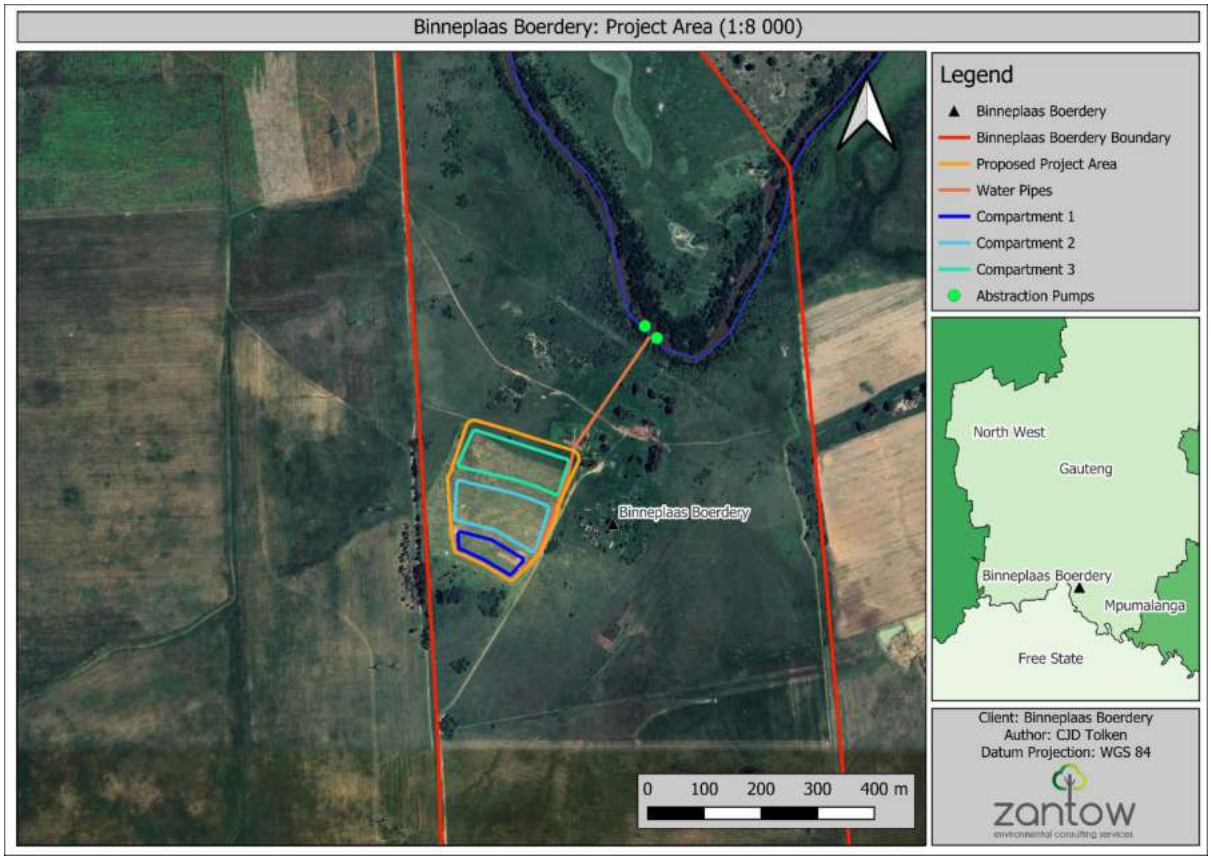


Figure 2: Proposed Dam Locations

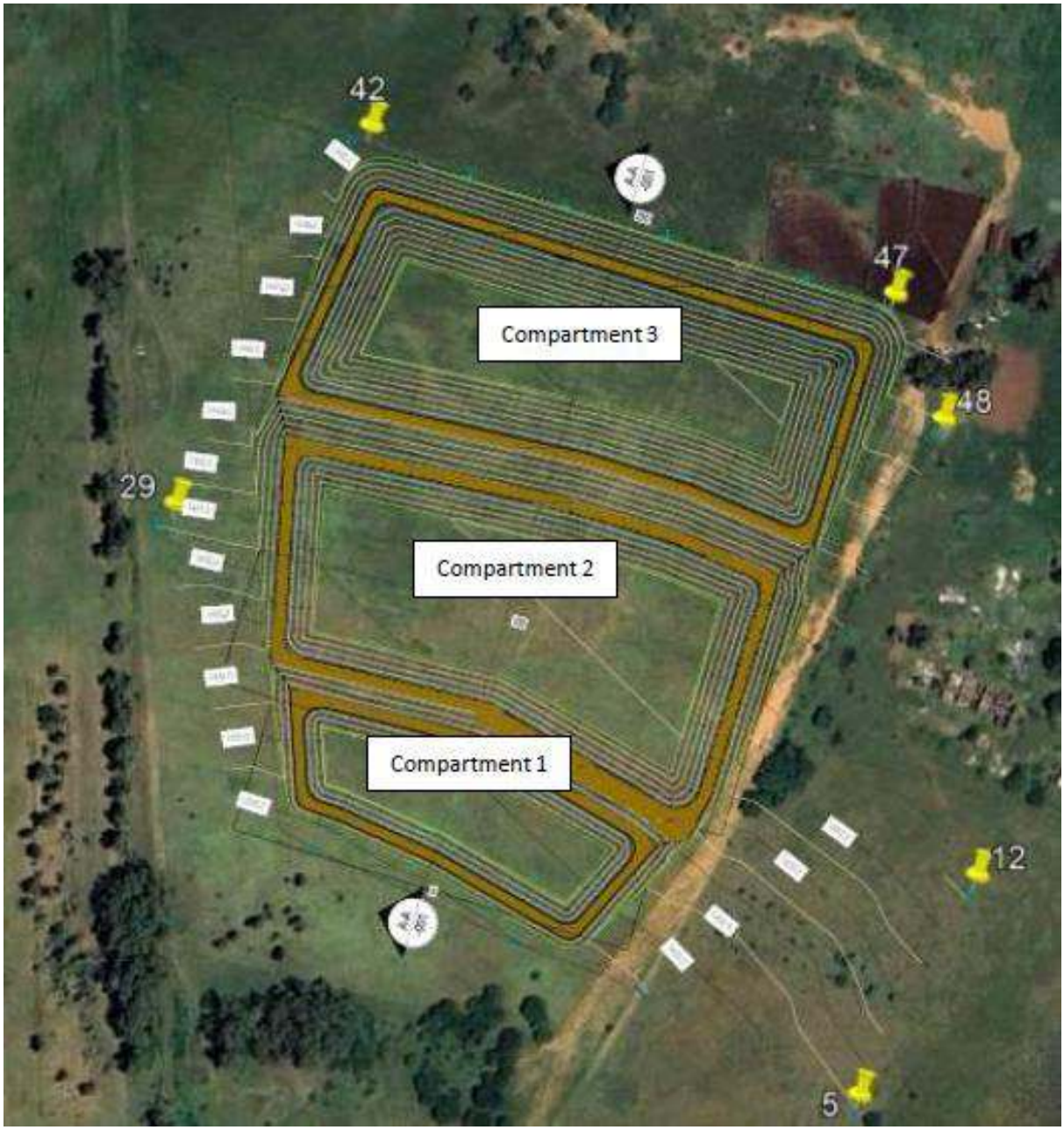


Figure 3: Dam Designs

The proposed activity triggers listed activities under the Environmental Impact Assessment Regulations, including the development of facilities or infrastructure for renewable electricity generation, the development of facilities or infrastructure for the off-stream storage of water exceeding 50 000 m³, and the clearance of vegetation within the applicable threshold. The proposed development does not trigger Listing Notice 2 Activity 16, as the dam-wall height remains below 5 metres and the high-water mark / water surface area remains below 10 hectares. The Basic Assessment process is therefore considered the applicable environmental assessment process.

Activity Number	Description
Listing Notice 1 Activity 1	the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;
Listing Notice 1 Activity 13	The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.
Listing Notice 1 Activity 27	The clearance of an area of 1 hectares 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.
Activity 12 of Listing Notice 3:	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. **C. Gauteng** i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.

The proposed development also requires authorisation in terms of the National Water Act, 1998 (Act No. 36 of 1998). A Water Use Licence application will be required for the taking of water from a water resource and the storage of water. The Water Use Licence process will address the applicable water-use requirements, including the existing abstraction arrangement, the proposed off-channel storage, and any operational conditions required by the Department of Water and Sanitation. The existing registration does not remove the requirement to obtain any additional authorisation required for the proposed storage infrastructure and associated operational changes.

The preferred proposal was assessed against a solar-powered alternative and the no-go alternative. The preferred proposal incorporates hydropower-assisted irrigation and makes use of the natural slope of the property and the movement of water through the system to support renewable energy generation or energy recovery. The solar-powered alternative would also provide renewable-energy and climate-change benefits. However, it would require a larger development footprint, would result in additional vegetation clearance and land disturbance, and would introduce long-term waste-management

considerations associated with solar panels, inverters, batteries where applicable, cabling and other electrical components. The no-go alternative would avoid construction-phase disturbance, but would prevent the applicant from improving irrigation reliability, agricultural productivity, energy efficiency and long-term operational sustainability.

The receiving environment is predominantly agricultural in character. The affected area has historically been cultivated and transformed for agricultural use. The proposed development footprint is located within an existing agricultural setting and has been selected to avoid, as far as reasonably practicable, unnecessary encroachment into sensitive environmental features. The Suikerbosrand River and associated watercourse area remain key environmental considerations, and the proposed balancing dam infrastructure will be located outside the river channel and outside the defined watercourse area. No construction, excavation, infilling or material movement is proposed within the river channel or within the defined watercourse area.

The potential impacts associated with the proposal are expected to occur mainly during the construction phase and include temporary dust generation, noise, soil disturbance, traffic movement, vegetation clearance, erosion risk, stockpiling of excavated material and general construction waste. These impacts are anticipated to be localised, short-term and manageable through the implementation of mitigation measures contained in the Environmental Management Programme. Such measures include footprint demarcation, dust suppression, erosion and sediment control, stormwater management, responsible stockpiling, waste separation, rehabilitation of disturbed areas and control of construction activities.

A significant volume of material will be excavated during construction of the three off-channel balancing dam basins. The dam design report indicates that the construction works will include clearing and grubbing, excavation of the dam basins, stockpiling of material for reuse, construction and shaping of embankments, preparation of internal slopes, installation of the HDPE liner, construction of spillways and installation of outlet infrastructure. The design report further indicates substantial earthworks volumes, including excavation below natural ground level, embankment formation and surplus cut-to-spoil material.

The management of excavated material will follow the waste management hierarchy and resource-efficiency principles. Suitable excavated material will be selectively stockpiled and reused internally as far as reasonably practicable for dam-wall construction, embankment formation, crest shaping, slope profiling, backfilling, levelling and rehabilitation. This reduces the need to import additional borrow material and ensures that suitable material generated by the project is put to beneficial use within the construction works.

Excavated overburden and surplus material that is not required for construction of the dam walls or other on-site construction activities will not automatically be disposed of as waste. Where suitable, this material will be sorted and may be crushed and screened to produce G5-type construction material for beneficial reuse. Such material may be used on the property or made available for lawful off-site reuse in the civil and building sector, provided that this is undertaken in accordance with applicable legal requirements and does not result in pollution, nuisance or unlawful disposal. Any unsuitable or

contaminated material that cannot be reused or recovered must be removed to an appropriately authorised waste management facility.

General construction waste is expected to be limited and will mainly comprise incidental waste such as packaging, off-cuts, damaged materials, construction consumables and similar waste streams. These materials will be separated, temporarily stored in designated areas and removed for recycling, recovery or disposal at an appropriately authorised municipal landfill or waste management facility.

The operational phase is expected to result in positive impacts associated with improved irrigation reliability, improved agricultural productivity, increased crop-production stability, improved water management, energy efficiency and reduced reliance on conventional grid-supplied electricity. The project will support the agricultural viability of the property and contribute to local food-production capacity and associated socio-economic benefits.

Based on the assessment undertaken, the preferred proposal is considered environmentally acceptable, provided that the mitigation measures in the Environmental Management Programme are implemented and that the project is undertaken in accordance with the approved engineering design and the conditions of the Environmental Authorisation and Water Use Licence. The preferred proposal provides an appropriate balance between environmental protection, agricultural productivity, water-use efficiency, renewable-energy use, resource recovery and socio-economic benefit. It is therefore recommended that the competent authority consider granting Environmental Authorisation for the proposed development, subject to appropriate conditions.

GAUTENG PROVINCE
ENVIRONMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (2025 VERSION 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by the Gauteng Department of Environment in terms of the EIA Regulations, 2014.

2. This application form is current as of April 2025. It is the applicant's responsibility to check for any updated versions published by the competent authority.

3. A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.

4. **A draft Basic Assessment Report must be submitted, for purposes of comments within thirty (30) days, to a Competent Authority (uploaded to the EIA online system) empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application. The EIA online system can be accessed at https://eia.gauteng.gov.za.**

5. **A copy (PDF) of the final report and attachments must be uploaded to the EIA online system. The EIA online system can be accessed at https://eia.gauteng.gov.za.**

6. **Draft and final reports submitted in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) must be emailed to environmentsue@gauteng.gov.za.**

7. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

8. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.

9. An incomplete report may lead to an application for environmental authorisation, or a Waste Management License being refused.

10. Any report that does not contain a titled and dated full-colour large-scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation or a Waste Management License being refused.

11. The use of “not applicable” in the report must be done with circumspection because if it is used for material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation or Waste Management License being refused.

12. The applicant must fill in all relevant sections of this form. Incomplete applications will not be processed. The applicant will be notified of the missing information in the acknowledgement letter that will be sent within 10 days of receipt of the application.

13. Unless protected by law, and indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.

14. Although pre-application meetings with the Competent Authority is optional, applicants are advised to have these meetings before submission of the application to seek guidance from the Competent Authority.

15. **Please note that your submission will be acknowledged within 10 days of receipt. If you do not receive an acknowledgement from the Department within this period, kindly follow up using our central email address: environmentenquiries@gauteng.gov.za**

DEPARTMENTAL DETAILS

Gauteng Department of Environment
Attention: Environmental Support Services of the Environmental Branch
P.O. Box 8769
Johannesburg
2000
Ground floor, Umnotho House, 56 Eloff Street, Johannesburg
Department central telephone number: (011) 240 2500
Email: ENVIRONMENTSUE@gauteng.gov.za or environmentenquiries@gauteng.gov.za

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

Permission to submit the Final Basic Assessment Report (BAR) within the prescribed 140-day period was requested on 16 June 2026 and was granted on 25 June 2026. The Final BAR will be submitted within the approved 140-day timeframe. The correspondence granting the extension is included in **Appendix I3**.

Is a closure plan applicable for this application and has it been included in this report? NO

if not, state reasons for not including the closure plan.

No decommissioning will be undertaken at this stage. The applicant proposes to incorporate the proposed activity into their current agricultural activities.

A closure plan is therefore not applicable in terms of this application. If in future, the applicant wishes to cease operation and pursue the closure of the operations, a closure plan will be drafted and submitted to the relevant competent authorities along with the relevant applications as applicable.

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity? YES

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person? YES

If no, state reasons for not attaching the list.

A copy of the Draft BAR was circulated to the following Departments for Comment:

- The Midvaal Local Municipality
- Gauteng Department of Agriculture and Rural Development
- The Department of Forestry, Fisheries and the Environment
- Department of Water and Sanitation

Refer to **Appendix E-9** for a full I&AP list.

Have State Departments including the competent authority commented? Yes

If no, why?

The Draft Basic Assessment Report (BAR) was made available to the competent authority and relevant State Departments for review and comment during the public participation process from **10 June 2026 to 10 July 2026**. Comments were received from the **Gauteng Department of Environment (GDEnv)** and the **Midvaal Local Municipality**. All comments received have been considered and addressed in the Final BAR, where applicable.

The comments received from **GDEnv** primarily related to the following:

- Confirmation of the listed activities applied for and the inclusion of a clear description of the proposed development in relation to each listed activity.
- The preparation and inclusion of an Archaeological and Heritage Compliance Statement in the Final BAR.
- Inclusion of post-mitigation impact significance ratings in the impact assessment.
- Consideration and inclusion of feasible alternatives in the Final BAR.
- Inclusion of a comprehensive Need and Desirability assessment.
- Provision of an A3 sensitivity map showing all environmental sensitivities in colour with a clear and legible legend.
- Confirmation that the Public Participation Process (PPP) was undertaken in accordance with the Environmental Impact Assessment (EIA) Regulations.
- Amendment of the Application Form and the Final BAR to include **Activity 12 of Listing Notice 3**

of the EIA Regulations.

- Inclusion of the Environmental Management Programme (EMPr) as part of the Final BAR.

The comments received from the **Midvaal Local Municipality** related to the following:

- The alignment of the proposed development with the **Midvaal Spatial Development Framework (2025–2026)**.
- Clarification that the proposed development is intended for private use only.
- The requirement that all building plans be prepared and submitted in accordance with the applicable **SABS standards** and municipal building requirements.

Refer to **Appendix E4** for communication to and from I&APs and **Appendix E7** for the comments received from the authorities.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

Application for an Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land adjacent to the Suikerbosrand River.

Select the appropriate box

The application is for an upgrade of an existing development		The application is for a new development	x	Other, specify	

Does the activity also require any authorisation other than NEMA EIA authorisation?

Yes	

If yes, describe the legislation and the Competent Authority administering such legislation

The activity requires a Water Use Licence from the Department of Water and Sanitation. The activity will trigger 21 (a) “taking water from a water source”, as well as 21 (b) “storing water” within the National Water Act.

If yes, have you applied for the authorisation(s)?	YES X	
If yes, have you received approval(s)? (attach in appropriate appendix)		NO X

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National En ironmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	27 November 1998
Constitution of the Republic of South Africa (No. 108 of 1996)	National	8 May 1996
Environmental Impact Assessment Regulation 2014 - Listing Notice 1 of 2014 - GN R983/2014 - Listing Notice 2 of 2014 - GN R984/2014 - Listing Notice 3 of 2014 - GN 985/2014	National & Provincial	18 June 2014
Environmental Management Framework Regulations, 2010 – GN R547/2010	National & Provincial	2010
Protected Areas Act: Admission of Guilt Fines Regulations, 2011 - GN R574/2011	National & Provincial	2011
Fees For Consideration and Processing of Applications for Environmental Authorizations and Amendments Thereto – GN 141/2014	National & Provincial	2014
Regulations TO Phase-Out the Use of Polychlorinated Biphenyls (PCBs) Materials and Polychlorinated Biphenyl (PCBs) Contaminated Materials - GN R549/2014	National & Provincial	2014
National Appeal Regulations, 2014 - GN R993/2014	National & Provincial	2014
National Exemption Regulations, 2014 - GN R994/2014	National & Provincial	2014
Appointment of the Environmental Assessment Practitioners Association of South Africa AS The Single Registration Authority in Terms of Section 24H of the National Environmental Management Act, 1998 – GN 104/2018	National & Provincial	2018
Regulations Laying Down the Procedure to be Followed	National & Provincial	2019

for the Adoption of Spatial Tools or Environmental Management Instruments - GN R542/2019		
Notice of the Requirement to Submit a Report Generated by the National Web Based Environmental Screening Tool - GN 960/2019	National & Provincial	2019
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 Of the Act, when applying for Environmental Authorization - GN 320/2020	National & Provincial	2020
National Environmental Management Air Quality Act, 2004 (No. 39 of 2004 as amended).	National, Provincial & Local	11 September 2005
National Water Act (No. 36 of 1998 as Amended)	National & Provincial	2 September 2014
Gauteng Provincial Environmental Management Framework (GPEMF) Standard (GN 164 of March 2018)	National & Provincial	2 March 2018
The Gauteng Pollution Buffer Zones Guideline	National & Provincial	March 2017
Guideline for Implementation: Public Participation in the EIA Process - GN 807/2012	National & Provincial	2012
Guideline For Implementation: Need and Desirability - GN 891/2014	National & Provincial	2014
National Environmental Management Waste Act (No. 59 of 2008)	National & Provincial	2008
Waste Classification and Management Regulations, 2013 - GN R634/2013	National & Provincial	2013
National Norms and Standards for The Assessment of Waste for Landfill Disposal - GN R635/2013	National & Provincial	2013
List Of Waste Management Activities That Have, Or Are Likely to Have, A Detrimental Effect on The Environment - GN 921/2013	National & Provincial	2013
National Norms and Standards for The Storage of Waste - GN 926/2013	National & Provincial	2013
National Dust Control Regulations, 2026	National & Provincial	2026

Description of compliance with the relevant legislation, policy or guideline:

Legislation, policy of guideline	Description of compliance
Constitution of the Republic of South Africa (No. 108 of 1996) **Section 24: Environment.** "*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 secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*"	The proposed abstraction and storage of water from the Suikerbosrand river will allow Binneplaas Boerdery to increase agricultural yield in a sustainable way. The operations of Binneplaas Boerdery will incorporate green technology and allow for economic growth in a sustainable and environmentally friendly manner.
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended). The NEMA is framework legislation in South Africa that governs environmental management.	An Environmental Management Program (EMPr) will be attached to **Appendix H** for the final BAR. The establishment of the activity triggers listed activities in terms of NEMA, and will therefore require an Environmental Authorization, which is being applied for.

Section 2: Environmental Management Principles *"Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option."* **Section 24:** Environmental Authorisations *1) "In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister responsible for mineral resources, as the case may be, except in respect of those activities that may commence without having to obtain an environmental auth* *2) risation in terms of this Ac* *3) .* *(1A) Every applicant must comply with the requirements prescribed in terms of this Act in relation to—* *a) steps to be taken before submitting an application, where applicable;* *b) any prescribed report;* *c) any procedure relating to public consultation and information gathering;* *d) any environmental management programme;* *e) the submission of an application for an environmental authorisation and any other relevant information; and* *f) the undertaking of any specialist report, where applicable."* **Section 30:** Control of incidents Deals with the identification, reporting and remediation of environmental incidents.	

Environmental Impact Assessment Regulation 2014

- Listing Notice 1 of 2014 – GN R983/2014
- Listing Notice 2 of 2014 – GN R984/2014
- Listing Notice 3 of 2014 - GN 985/2014

The expansion of the activity triggers the following activities:

Activity No and description	Description of the development related to the listed activity
Listing Notice 1 Activity 1 The development of facilities or infrastructure for the generation of electricity from a renewable resource where— (ii) the output is 10 megawatts or less, but the total extent of the facility covers an area in excess of 1 hectare.	The construction of three cascading off-channel balancing dams with an installed hydropower generation capacity of 1 MW to supply electricity to the irrigation system. The development will occupy a total footprint of approximately 3.2 hectares.
Listing Notice 1 Activity 13 The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.	The construction of three cascading off-channel balancing dams with a combined capacity of approximately 107 976 m³.
Listing Notice 1 Activity 27 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.	The clearance of 3.2 hectares of land for the construction of three cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system.
Activity 12 of Listing Notice 3: 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. C. Gauteng i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.	The clearance of 3.2 hectares of land for the construction of three cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system in a Critical Biodiversity Area 1 and 2 area and an Ecological Support Area (ESA) 1 site.

Activities considered but ruled as out Not Applicable

Motivation for the Non-Applicability of Listing Notice 1 Activity 12
Listing Notice 1 Activity 12 is not considered applicable to the proposed development. The proposed balancing dams and associated infrastructure are designed as off-channel infrastructure and will not be located within the Suikerbosrand River or within the defined watercourse area.

The infrastructure will also not be located within 32 metres of the edge of the watercourse, measured from the edge of the watercourse, and no development setback has been declared or adopted for the relevant section of the site.

The proposed activity therefore does not meet the spatial triggering criteria of Activity 12, as the development will not occur within a watercourse, in front of a development setback, or within 32 metres of the edge of a watercourse where no development setback exists. The activity has been positioned outside the regulated spatial extent contemplated under Activity 12.

The abstraction and storage of water will instead be assessed and regulated through the Water Use Licence process in terms of the National Water Act, 1998, specifically in relation to the taking of water from a water resource and the storage of water.

Motivation for the Non-Applicability of Listing Notice 1 Activity 19
Listing Notice 1 Activity 19 is not considered applicable to the proposed development. For purposes of this assessment, a watercourse includes a river, spring, natural channel in which water flows regularly or intermittently, wetland, lake, dam into which or from which water flows, or any collection of water declared to be a watercourse, including, where relevant, the bed and banks of such watercourse.
The proposed works will not involve infilling or depositing material into the Suikerbosrand River or any defined watercourse. The proposed works will also not involve the dredging, excavation, removal or movement of soil, sand, pebbles, rock or any other material from within the watercourse, including the bed or banks of the watercourse. All excavation and earthworks associated with the proposed balancing dams and related infrastructure will take place outside the delineated watercourse area.
Activity 19 is therefore not triggered, as the proposed activity will not result in the infilling, depositing, dredging, excavation, removal or movement of more than 10 cubic metres of material within or from a watercourse. Any abstraction infrastructure and associated water-use activities will be addressed through the Water Use Licence process, but the physical construction works themselves will be located outside the watercourse area and will not involve excavation or material movement from the watercourse.

Dam Design, Storage Capacity and Applicability of Listing Notice 1 Activity 13 vs Listing Notice 2 Activity 16

A detailed design report has been prepared for the proposed Uitvlugt / Binneplaas off-channel balancing dam by PG Consulting Engineers, dated February 2026. The proposed dam will be constructed as a lined, off-channel water storage facility and will consist of three separate compartments. The three-compartment design was specifically selected to respond to the natural topography of the site and to ensure that the maximum dam-wall height remains below 5 metres.

The proposed balancing dam will be lined with a 1.5 mm HDPE geomembrane liner and will be used for irrigation water balancing. Water will be pumped from the Suikerbosrand River in accordance with the relevant Water Use Licence requirements and stored in the off-channel balancing dam system. The dam will not be constructed within the river channel.
The design capacity and dimensions of the three compartments are summarised as follows:

Dam compartment	Storage capacity	Water surface area at full supply level	Maximum wall height above natural ground level	Free-board	Spillway
Compartment 1	Approximately 8 653 m³ to 10 764 m³, depending on design level	Approximately 3 991 m²	2.8 m	0.5 m	Gabion HDPE-lined chute spillway

	referenced				
Compartment 2	Approximately 43 409 m³ to 49 459 m³, depending on design level referenced	Approximately 11 986 m²	4.9 m	0.5 m	Gabion HDPE-lined chute spillway
Compartment 3	Approximately 55 914 m³ to 61 909 m³, depending on design level referenced	Approximately 11 641 m²	4.9 m	0.5 m	Gabion HDPE-lined chute spillway

The combined design capacity of the proposed off-channel balancing dam system is approximately **107 976 m³ at full supply level**. The total water surface area at full supply level is approximately 27 618 m², equivalent to approximately 2.76 hectares. The overall dam footprint is approximately **3.2 hectares**. The combined outer crest perimeter length is approximately 768 metres.

On the basis of the above, Listing Notice 1 Activity 13 is triggered, as the proposed development entails the development of facilities or infrastructure for the off-stream storage of water with a combined capacity exceeding 50 000 m³. The proposed dam system is therefore correctly included in the Basic Assessment process.

Listing Notice 2 Activity 16 is not triggered. The design report confirms that the maximum dam-wall height will be below 5 metres, with the highest wall height being 4.9 metres for Compartments 2 and 3. The total water surface area at full supply level is approximately 2.76 hectares, which is below the 10-hectare threshold. The overall footprint of the dam is approximately 3.2 hectares, which also remains below 10 hectares. The proposed development therefore does not meet either of the Listing Notice 2 Activity 16 thresholds, namely a dam wall of 5 metres or higher, or a high-water mark area of 10 hectares or more.

The design report further indicates that, in terms of the dam-safety considerations under the National Water Act, a dam with a wall height of more than 5 metres and a capacity exceeding 50 000 m³ would be regarded as a dam with a safety hazard. As the proposed dam compartments have wall heights below 5 metres, the engineer indicates that the proposed dam is expected to be regarded as a Category 0 dam, without a dam-safety risk. The dam is therefore not expected to require classification as a dam with a safety risk, although the final position will remain subject to the Department of Water and Sanitation's requirements during the Water Use Licence and dam-safety review process.

The proposed design therefore substantiates the Basic Assessment route. The project triggers Listing Notice 1 Activity 13 due to off-stream water storage exceeding 50 000 m³ but does not trigger Listing Notice 2 Activity 16 because the dam-wall height remains below 5 metres and the water surface area / high-water mark area remains below 10 hectares.

National Environmental Management Air Quality Act, 2004 (No. 39 of 2004 as amended). **Section 37: "***Application for atmospheric emission licences -* *1) A person must apply for an atmospheric emission licence by lodging with the licensing*	No Atmospheric Emissions License (AEL) will be required for the activity.

authority of the area in which the listed activity is or is to be carried out, an application in the form required by the licensing authority." **Section 46: "**Variation of provisional atmospheric emission licences and atmospheric emission licences *1) A licensing authority may, by written notice to the holder of a provisional atmospheric emission licence or an atmospheric emission licence, vary the licence* *a) if it is necessary or desirable to prevent deterioration of ambient air quality;* *b) if it is necessary or desirable for the purposes of achieving ambient air quality standards;* *c) if it is necessary or desirable to accommodate demands brought about by impacts on socio-economic circumstances and it is in the public interest to meet those demands;* *d) at the written request of the holder of the licence;* *if it is transferred to another person in terms of section 44; or if it is reviewed in terms of section 45.*	
Notice of the Requirement to Submit a Report Generated by the National Web Based Environmental Screening Tool - GN 960/2019	A Screening Tool Report has been generated and is attached in **Appendix I1** of this report and a site verification report is attached in **Appendix I2**.
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental themes in terms of Sections 24(5)(A) and (H) and 44 of the Act, When Applying for Environmental Authorization – GN 320/2020	The National Screening Tool identified the proposed development footprint as having a high sensitivity for the Agricultural Theme. The site is currently zoned and utilized for agricultural purposes. A site visit conducted in January 2026 confirmed the presence of agricultural use both on and around the site. This has been addressed in the **Compliance Statement in Appendix G3**. For the Terrestrial Biodiversity Theme, the National Screening tool identified the area as having **very high sensitivity**. A site visit and Terrestrial Biodiversity Assessment was conducted by Excellence Ecology. This has been addressed in the **Compliance Statement in Appendix G1**. The screening tool also indicated that the site rated **very high** for Paleontology Theme. A site assessment and compliance statement was conducted by a qualified paleontologist. This has been addressed in the Compliance **Statement in Appendix G2**. The site was also identified as having a **medium** sensitivity for the Civil Aviation Theme. However, the proposed development will be located entirely within the bounds of the existing Binneplaas Boerdery property. As such, it poses no risk to airport operations or surrounding airspace. This has been addressed in the **Compliance Statement in Appendix G4**. A medium sensitivity for the Animal Species Theme was noted. Although the screening tool listed potentially present species. This has also been addressed

	in the **Compliance Statement in Appendix G1**. Additionally, a **low sensitivity** for Archaeological and Heritage Theme was noted. In accordance with the screening protocol, a compliance statement must be compiled for any significance rating. The **Compliance Statement** is attached to **Appendix G5**. A Screening Tool Report has been generated and is attached in **Appendix I1** of this report and a site verification report is attached in **Appendix I2**.
National Water Act (No. 36 of 1998 as Amended) *"The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors –* • *meeting the basic human needs of present and future generations;* • *promoting equitable access to water;* • *redressing the results of past racial and gender discrimination;* • *promoting the efficient, sustainable and beneficial use of water in the public interest;* • *facilitating social and economic development;* • *providing for growing demand for water use;* • *protecting aquatic and associated ecosystems and their biological diversity;* • *reducing and preventing pollution and degradation of water resources;* • *meeting international obligations;* *promoting dam safety; managing floods and droughts, and for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation."*	The applicant will utilize water from the Suikerbosrand River. The applicant is in the process of applying for a Water Use License from the Department of Water and Sanitation. The license will be for abstraction of water from a watercourse and the off-channel storage of the water.
Gauteng Pollution Buffer Zones Guideline (March 2017) "*The guideline was developed to ensure that pollution buffer areas are created between the pollution sources and the nearest human settlements. The purpose of the guideline is to ensure that the residents of the Gauteng province are protected from the emissions from pollution generators*"	The property does not fall close to any residential communities.
Guideline For Implementation: Need and Desirability - GN 891/2014	The guideline was followed in order to assess the need and desirability of the proposed project. Environmental and social issues were considered.

National Dust Control Regulations, 2026 Government Notice R.7335 on 31 March 2026	Due to the nature of the operations, the potential for dust generation is low. The dust control regulations will not likely be applicable as the facilities dust generating impacts are not expected to be significant.

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below.

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

The alternatives considered for this application were identified with reference to the purpose and need of the project, namely to improve irrigation reliability, support agricultural productivity and reduce reliance on conventional grid-supplied electricity. The assessment therefore focused on technically feasible alternatives for powering and operating the proposed irrigation and water-balancing system.

The preferred proposal comprises an off-channel balancing dam system with hydropower-assisted irrigation, which makes use of the natural slope of the property and the movement of water through the system to support renewable energy generation or energy recovery. Alternative 1 comprises a solar-powered water abstraction and storage system, which would also provide renewable-energy benefits but would require a larger physical footprint for solar infrastructure and would introduce additional long-term waste-management considerations associated with solar panels, inverters, batteries where applicable, cabling and other electrical components.

No separate site alternative was considered practical or reasonable, as the infrastructure must serve the existing agricultural operation on Portion 9 of the farm Uitvlugt 434 IR and must be functionally linked to the existing registered abstraction point, existing pumps, irrigation infrastructure and cultivated areas. The position of the proposed off-channel balancing dams was therefore informed by the existing agricultural layout, the location of the abstraction infrastructure, the natural slope of the property, engineering design requirements, environmental sensitivity considerations and the need to avoid encroachment into the Suikerbosrand River and associated watercourse area.

The no-go alternative was retained as the baseline against which the proposal and Alternative 1 were assessed, in accordance with the requirements of the EIA Regulations.

Provide a description of the alternatives considered

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
1	Proposal	The proposed project entails the development of an integrated water abstraction, storage, energy recovery, and irrigation system on agricultural land located adjacent to the Suikerbosrand River.
2	Alternative 1	The alternative entails the development of a water abstraction and storage system which is powered by a solar farm. Located on agricultural land adjacent to the Suikerbosrand River.
3	Alternative 2	N/A

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

An alternative was provided.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

	Size of the activity:
Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***	3.2 ha
Alternatives:	
Alternative 1 (if any)	4.2 ha
Alternative 2 (if any)	N/A
	Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	N/A
Alternatives:	
Alternative 1 (if any)	N/A
Alternative 2 (if any)	N/A
	m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

	Size of the site/servitude:
Proposed activity	221 ha
Alternatives:	
Alternative 1 (if any)	221 ha
Alternative 2 (if any)	N/A
	Ha/m^2

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	YES X
If NO, what is the distance over which a new access road will be built	N/A

Describe the type of access road planned:

N/A

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?	Yes X
If NO, what is the distance over which a new access road will be built	N/A

Describe the type of access road planned:

N/A

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2

Does ready access to the site exist, or is access directly from an existing road?

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

N/A

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated | 1 | Number of times

(only complete when applicable)

Proposal:

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);

- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

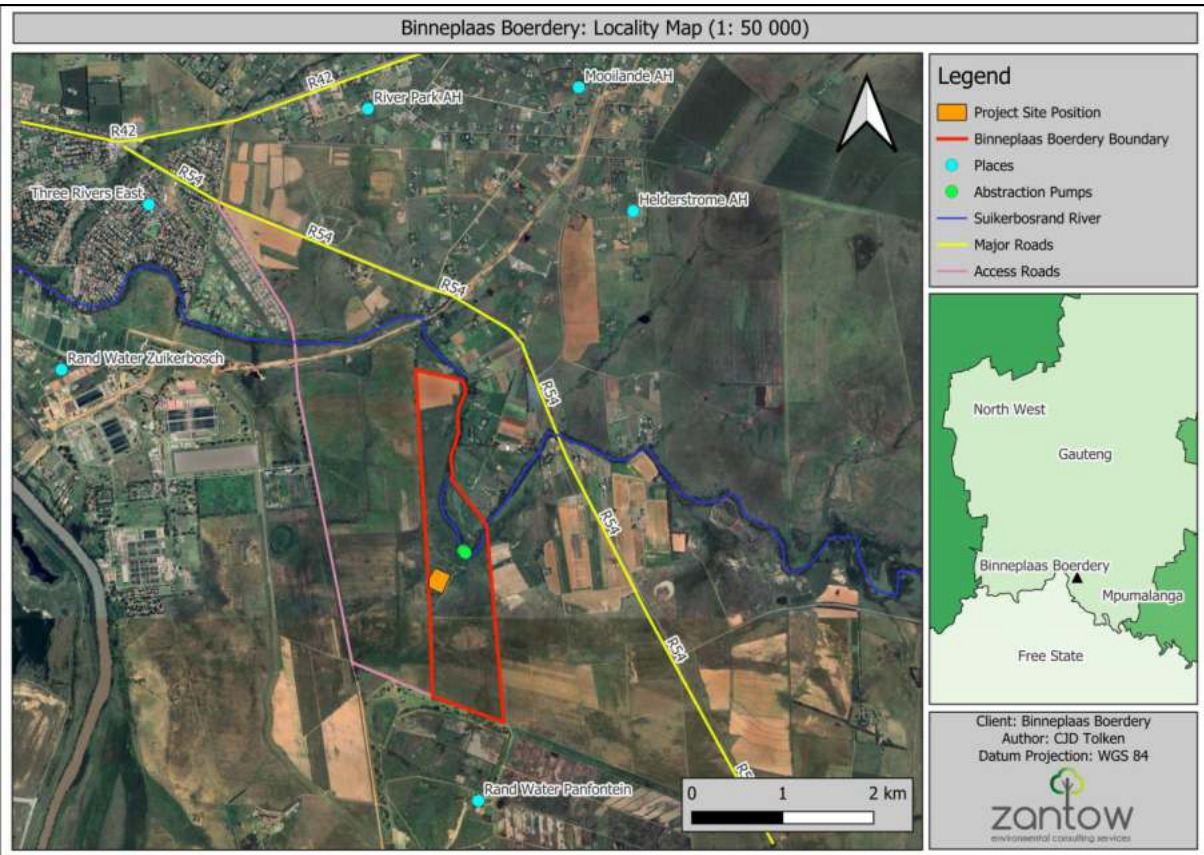


Figure 1: Locality Map

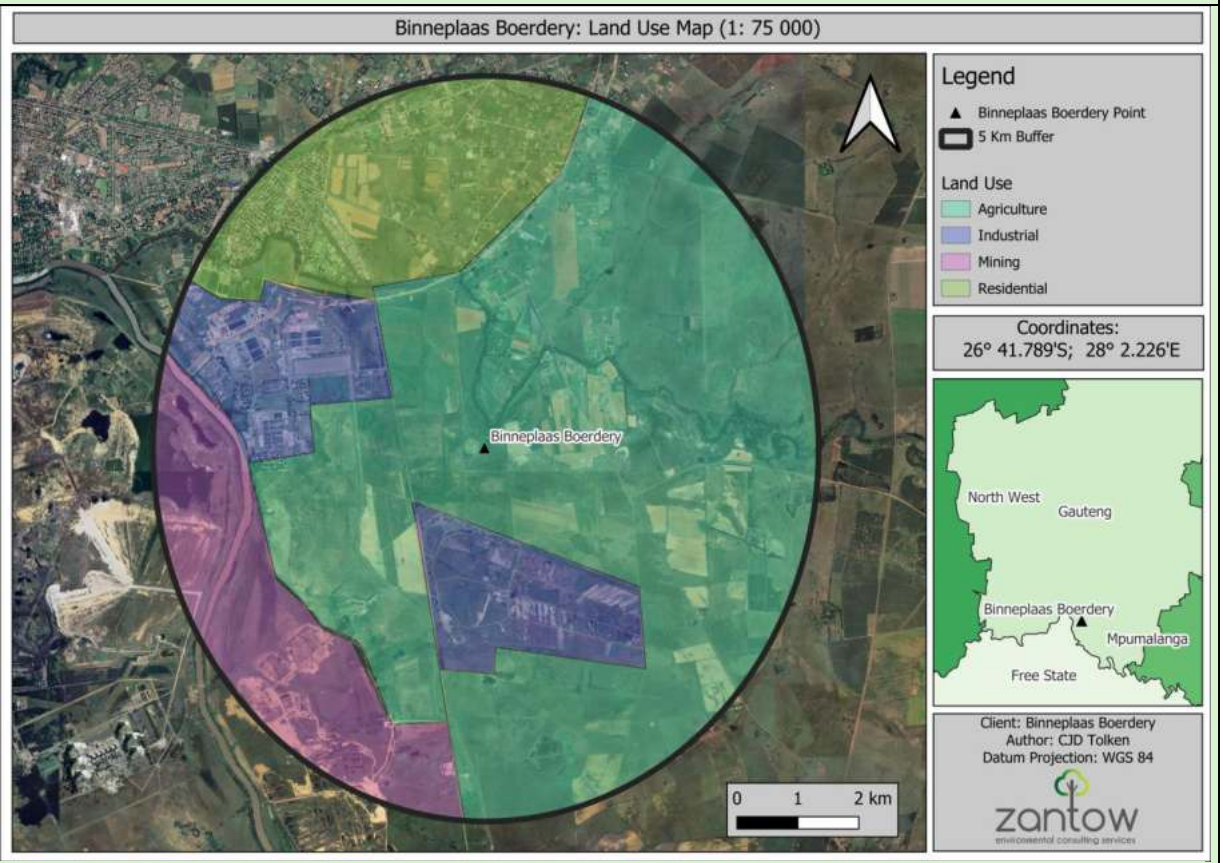


Figure 2: Land Use Map

7. SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

Figure 3: North view of the selected site

Figure 4: North-east view of the selected site

Figure 5: East view of the selected site

Figure 6: South-east view of the selected site

Figure 7: South view of the selected site

Figure 8: South-west view of the selected site

Figure 9: West view of the selected site

Figure 10: North-west view of the selected site

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Refer to **Appendix C** for copies of the site illustrations.

Alternative 1:

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);

- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

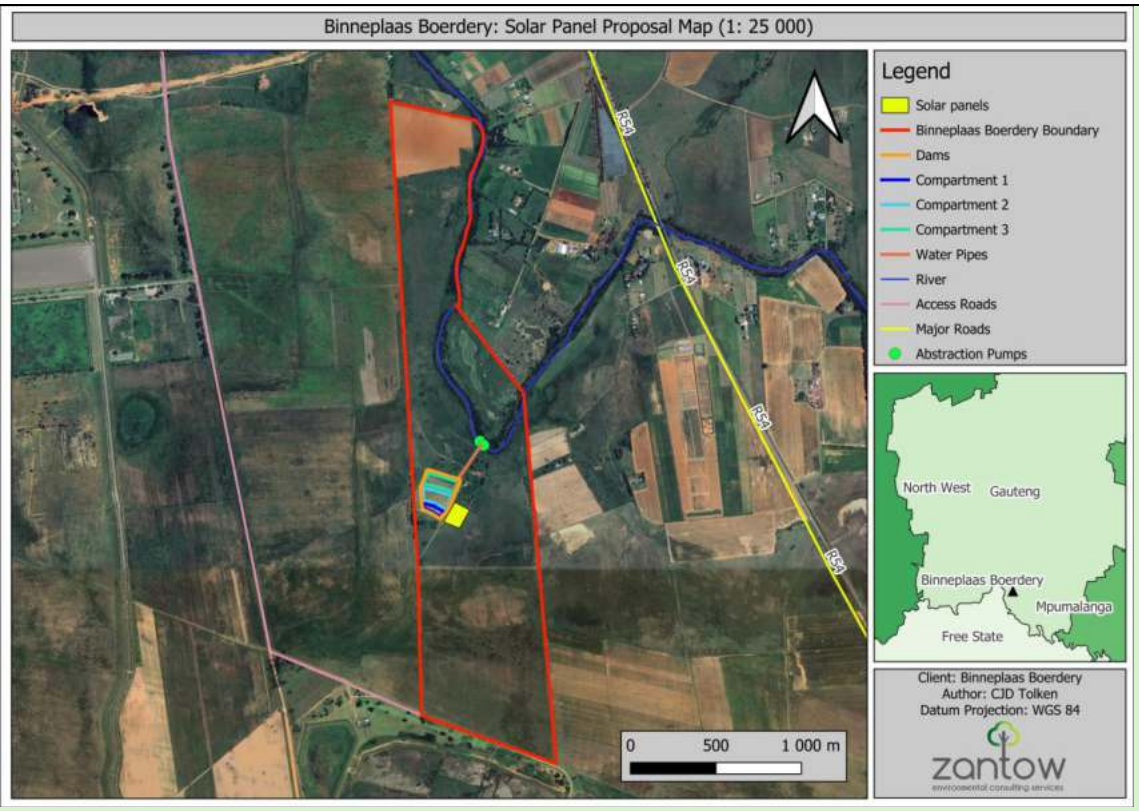


Figure 11: Alternative 1 Locality Map

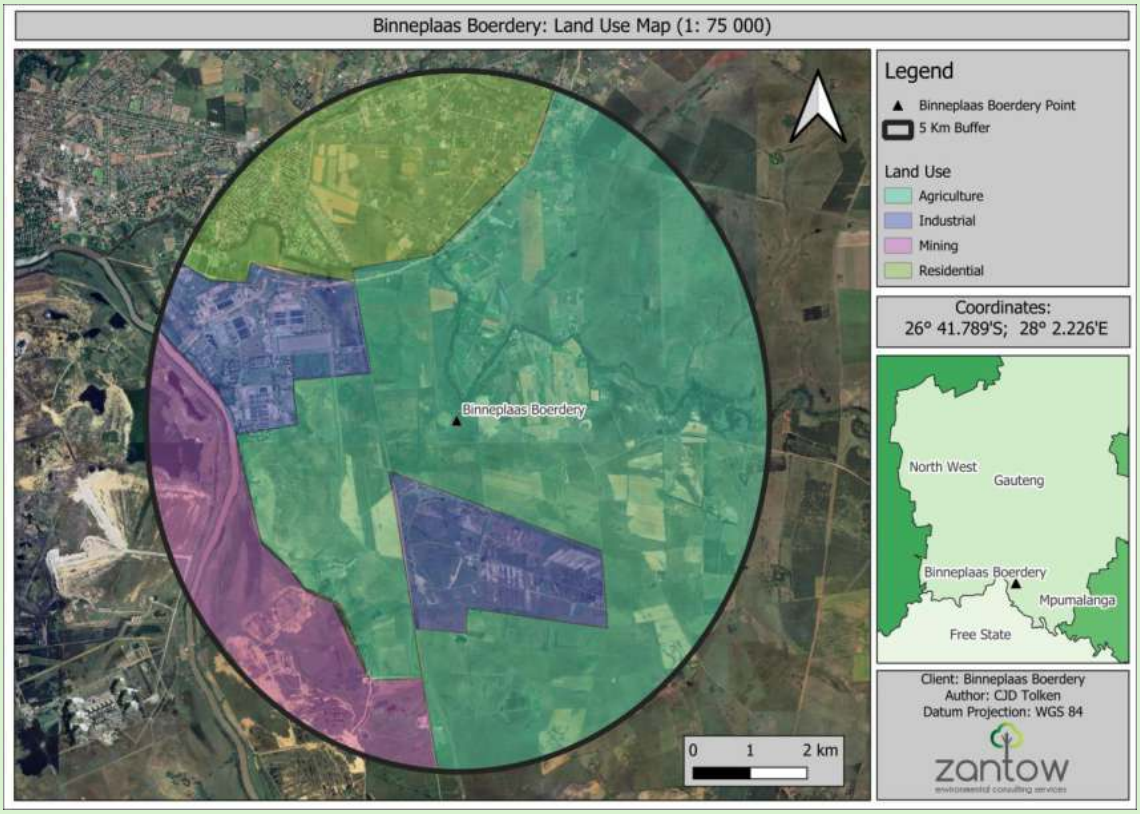


Figure 12: Alternative 1 Land Use Map

7. SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix**.** It should be supplemented with additional photographs of relevant features on the site, where applicable.

Figure 13: North view of the selected site

Figure 14: North-east view of the selected site

Figure 15: East view of the selected site

Figure 16: South-east view of the selected site

Figure 17: South view of the selected site

Figure 18: South-west view of the selected site

Figure 19: West view of the selected site

Figure 20: North-west view of the selected site

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Refer to **Appendix C** for copies of the site illustrations.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route | **Not Applicable** | times

Instructions for completion of Section B for location/route alternatives

1) For each location/route alternative identified the entire Section B needs to be completed
2) Each alterative location/route needs to be clearly indicated at the top of the next page
3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives | **Not Applicable** | times | (complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- ☐ All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- ☐ All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route | **N/A** | (complete only when appropriate for above)

Section B – Location/route Alternative No. | **N/A** | (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	The property is located on Portion 9 of Erf 434, Uitvlugt Farm in Cooperville AH. The property is zoned for agricultural use and is currently being utilized as an agricultural holding.

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Alternative:

Latitude (S):	**Longitude (E):**
-26.696483°	28.037080°

In the case of linear activities:

Alternative:

Latitude (S):	**Longitude (E):**

☐ Starting point of the activity
☐ Middle point of the activity

☐ End point of the activity [redacted]

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached **N/A**

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	R	0	0	0	0	0	0	0	0	0	4	3	4	0	0	0	0	9
ALT. 1	[redacted]																				
ALT. 2																					
etc.																					

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

~~Flat~~	~~1:50 – 1:20~~	1:20 – 1:15 X	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

~~Ridgeline~~	~~Plateau~~	~~Side slope of hill/ridge~~	~~Valley~~	Plain X	~~Undulating plain/low hills~~	~~River front~~

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

	[redacted]	
Shallow water table (less than 1.5m deep)		NO X
Dolomite, sinkhole or doline areas		NO X
Seasonally wet soils (often close to water bodies)		NO X
Unstable rocky slopes or steep slopes with loose soil		NO X
Dispersive soils (soils that dissolve in water)		NO X
Soils with high clay content (clay fraction more than 40%)		NO X
Any other unstable soil or geological feature		NO X
An area sensitive to erosion		NO X

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s) [redacted] NO X

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

[redacted]

c) are any caves located within a 300m radius of the site(s) [redacted] NO

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

d) are any sinkholes located within a 300m radius of the site(s) NO

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)? YES X

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % = 0	Natural veld with scattered aliens % =0	Natural veld with heavy alien infestation % =0	Veld dominated by alien species % =0	Landscaped (vegetation) % =0
Sport field % =0	Cultivated land % =100	Paved surface (hard landscaping) % =0	Building or other structure % =0	Bare soil % =0

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site NO x

If YES, specify and explain:

A Terrestrial Biodiversity study was undertaken on the proposed project location. The study confirmed that there were no species of conservation concern located within the proposed project area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site. NO

If YES, specify and explain:

N/A

Are there any special or sensitive habitats or other natural features present on the site? NO

If YES, specify and explain:

N/A

Was a specialist consulted to assist with completing this section YES

If yes complete specialist details

Name of the specialist:	Mari van der Westhuizen		
Qualification(s) of the specialist:	M. Sc. In Environmental Sciences		
Postal address:	2 Mopani Ave, Potchefstroom		
Postal code:	2531		
Telephone:		Cell:	082 257 1715

E-mail:	mari@excellence-ecology.co.za	Fax:	N/A

Are any further specialist studies recommended by the specialist?	[redacted]	NO X
If YES, specify:	No- the compliance statement is attached to this report.	
If YES, is such a report(s) attached?	[redacted]	NO X

If YES list the specialist reports attached below

The compliance statement is attached to **Appendix G1** of this report.

Signature of specialist: MWesthuizen Date: 24 April 2026

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial[AN]	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport[N]	23. Train station or shunting yard[N]	24. Railway line[N]	25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam[A]	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH

7	**7**	**2**	**2**	**2**
7	**7**	**7**	**7**	**2**
7	**7**		**7**	**7**
7	**7**	**7**	**7**	**7**
7	**7**	**7**	**7**	**7**

WEST EAST

SOUTH

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "A" and with an "N" respectively.

Have specialist reports been attached		Yes X

If yes indicate the type of reports below

An agriculture compliance statement has been conducted and attached to **Appendix G3** of the DBAR.

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The proposed development of cascading off-channel balancing dams, associated river abstraction infrastructure, hydropower-assisted pumping systems and expanded irrigation activities is expected to generate a range of positive socio-economic benefits for the surrounding local communities. These benefits will arise during both the construction and operational phases of the project and will contribute to local economic stimulation, employment creation and improved agricultural productivity within the region.

During the construction phase, the development will create temporary employment opportunities for both skilled and semi-skilled workers. Construction activities such as bulk earthworks, dam embankment construction, liner installation, pipeline installation and mechanical works will require a labour force that includes equipment operators, general labourers, truck drivers, artisans and site supervisors. Where feasible, the Applicant will prioritise the use of locally sourced labour, thereby creating short-term employment and generating income within nearby communities. This injection of wages into the local economy is expected to have secondary benefits for local businesses and service providers.

In the longer term, the operational phase of the development will support sustained employment through the expansion of irrigated agriculture on the farm. Increased irrigation capacity will necessitate additional farm workers, irrigation system operators, crop management staff, maintenance personnel and security services. Sustained agricultural employment is particularly important in rural areas where job opportunities are limited and farming activities often form the backbone of the local economy.

The project will further stimulate the local economy through the procurement of goods and services required during construction and operation. This includes the sourcing of construction materials, plant hire, fuel supply, equipment maintenance, accommodation and catering services. Local contractors and suppliers are expected to benefit from participation in the project, thereby strengthening regional economic activity. Increased agricultural production enabled by development will also support downstream economic sectors such as produce transport, storage, processing and market supply chains.

The provision of reliable irrigation water will enhance agricultural productivity and contribute positively to food security within the broader region. Expanded irrigation will support increased crop yields, improved crop diversity and more stable agricultural output. This contributes not only to the financial sustainability of the farming enterprise but also to the availability of agricultural produce within local and regional markets.

Skills development and capacity building will also arise from the project. Local workers employed during construction and operation will gain experience in dam construction, earthworks, pipeline installation, irrigation infrastructure operation and general farm management practices. Health and safety training provided during the construction phase will further enhance worker competencies. These skills are transferable and may benefit workers in securing future employment opportunities beyond the project itself.

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate Appendix

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources
authority;
(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?		NO X
If YES, explain:		
Not Applicable		

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Was a specialist consulted to assist with completing this section		**YES**	
If yes complete specialist details			
Name of the specialist:	Dr Nonhlanhla Vilakazi		
Qualification(s) of the specialist:	The Paleontologist Consultant: Dr Nonhlanhla Nonny Vilakazi Qualifications: PhD (Wits University) 2015 Experience: 10 years of research and lecturer in Palaeontology 16 years PIA studies.		
Postal address:	University of Johannesburg, Department of Zoology, D3 Lab 229, APK Campus,		
Postal code:	2029		
Telephone:	N/A	Cell:	079 759 6318
E-mail:	nonny.vilakazi@gmail.com	Fax:	N/A
Are any further specialist studies recommended by the specialist?			**NO**
If YES, specify:	N/A		
If YES, is such a report(s) attached?			**NO**
If YES list the specialist reports attached below			
N/A			

Signature of specialist:		Date:	30/05/2026

Briefly explain the findings of the specialist if one was already appointed:

The impact of the abstraction is LOW. It is therefore recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required for the commencement of this development, pending the discovery or exposure of any fossil remains during the excavation phase. Should fossil remains be discovered during any phase of abstraction, either on the surface or exposed to fresh excavations, the ECO responsible for these developments should be alerted immediately. Such discoveries ought to be protected (preferably in situ) and the ECO should alert SAHRA (South African Heritage Research Agency) for appropriate mitigation (e.g. recording, sampling or collection) can be taken by a professional palaeontologist. The specialist involved would require a collection permit from SAHRA. Fossil material must be curated in an approved collection (e.g. museum or university collection) and all fieldwork and reports should meet the minimum standards for palaeontological impact studies developed by SAHRA. The full report is attached to **Appendix G2** of the DBAR.

Will any building or structure older than 60 years be affected in any way?		NO X
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		NO X
If yes, please attached the comments from SAHRA in the appropriate Appendix		

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

2. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?	YES X
If yes, has any comments been received from the local authority?	YES X

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

The Draft Basic Assessment Report (BAR) was made available to the competent authority and relevant State Departments for review and comment during the public participation process from 10 June 2026 to 10 July 2026. Comments were received from the Gauteng Department of Environment (GDEnv) and the Midvaal Local Municipality. All comments received have been considered and addressed in the Final BAR, where applicable.

The comments received from GDEnv primarily related to the following:

- Confirmation of the listed activities applied for and the inclusion of a clear description of the proposed development in relation to each listed activity.
- The preparation and inclusion of an Archaeological and Heritage Compliance Statement in the Final BAR.
- Inclusion of post-mitigation impact significance ratings in the impact assessment.
- Consideration and inclusion of feasible alternatives in the Final BAR.
- Inclusion of a comprehensive Need and Desirability assessment.
- Provision of an A3 sensitivity map showing all environmental sensitivities in colour with a clear and legible legend.
- Confirmation that the Public Participation Process (PPP) was undertaken in accordance with the Environmental Impact Assessment (EIA) Regulations.
- Amendment of the Application Form and the Final BAR to include Activity 12 of Listing Notice 3 of the EIA Regulations.
- Inclusion of the Environmental Management Programme (EMPr) as part of the Final BAR.

The comments received from the Midvaal Local Municipality related to the following:

- The alignment of the proposed development with the Midvaal Spatial Development Framework (2025–2026).
- Clarification that the proposed development is intended for private use only.
- The requirement that all building plans be prepared and submitted in accordance with the applicable SABS/SANS standards and municipal building requirements.

The correspondence to and from local authorities is included in **Annexure E7** of the report.

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

Not Applicable

3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	YES

If “YES”, briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

The feedback received from surrounding land users was mostly in support of the development. The correspondence from the I&APs is included in **Appendix E4**

If “NO” briefly explain why no comments have been received

n/a

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 –Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
4) Each alterative needs to be clearly indicated in the box below
5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives | 1 | times (complete only when appropriate)

Section D Alternative No. | Proposal | (complete only when appropriate for above)

PROPOSAL – PROPOSED PROJECT SCOPE

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? YES

If yes, what estimated quantity will be produced per month? Unknown

How will the construction solid waste be disposed of (describe)?

Solid waste that is expected to arise from the construction phase consists of general waste from daily operations (papers, plastics etc.), hazardous waste (oil drums, oily rags, paints etc.), construction waste such as rubble and steel, as well as vegetation from the clearance of vegetation. The waste streams will be segregated on site to prevent waste contamination and to maximize the diversion of recyclable waste from landfills. Separate skip bins will be assigned for the waste types, and the respective waste streams will be handled by the respective duly licensed service providers. Records of waste disposal and safe disposal certificate will be obtained for audit purposes.

Where will the construction solid waste be disposed of (describe)?

- General (residual) and Construction waste will be disposed of at a licensed disposal site
- Recyclable waste (paper, plastic, etc.) and Scrap steel material will be sold to licensed recyclers
- Vegetation waste will be sent to a municipal garden site or sent to organic waste composting facilities

Will the activity produce solid waste during its operational phase? NO X

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

The entails the development of an integrated water abstraction, storage, energy recovery, and irrigation system on agricultural land, therefore solid no waste is expected from the operational phase.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity? NO X

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Not Applicable

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? NO X

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? NO X
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

The proposed project will not result in any solid waste in the operational phase. The solid waste from the construction phase will be separated at source to prevent any waste contamination and sent to duly authorized service providers. Waste or safe disposal records (where applicable) will be kept for audit purposes.

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? NO X
If yes, what estimated quantity will be produced per month? m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)? NO X

Will the activity produce any effluent that will be treated and/or disposed of on site? NO X

If yes, what estimated quantity will be produced per month? m^3

If yes describe the nature of the effluent and how it will be disposed.

Not Applicable

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility? NO X
If yes, provide the particulars of the facility:

Facility name:
Contact person:
Postal address:
Postal code:
Telephone: Cell:
E-mail: Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Not Applicable

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system? NO X
If yes, what estimated quantity will be produced per month? m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)? NO X

Will the activity produce any effluent that will be treated and/or disposed of on site? NO X

If yes describe how it will be treated and disposed off.

Not Applicable

Emissions into the atmosphere

Will the activity release emissions into the atmosphere? YES X

If yes, is it controlled by any legislation of any sphere of government? NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

Emissions will be generated only from the construction phase of the project. This will be caused by machinery associated with the construction of the dam infrastructure. No atmospheric emissions are anticipated once the construction is completed.

2. WATER USE

Indicate the source(s) of water that will be used for the activity

~~municipal~~	~~Directly from water board~~	~~groundwater~~	river, stream, dam or lake	~~other~~	~~the activity will not use water~~

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate
the volume that will be extracted per month: ± 68 395 000 liters

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix
Does the activity require a water use permit from the Department of Water Affairs? YES X

If yes, list the permits required

The activity requires a Water Use License from the Department of Water and Sanitation. The activity will trigger 21 (a) “taking water from a water source”, as well as 21 (b) “storing water” within the National Water Act.

Existing Registered Water Use and Abstraction Infrastructure

The proposed development must be understood in the context of the existing lawful agricultural water use on the property (**Appendix F**). The applicant is already using water for agricultural purposes on the property and the abstraction infrastructure, including the existing pumps and associated intake infrastructure, is already in place. The proposal does not represent the introduction of an entirely new agricultural water-use activity on an unused property, but rather the improvement and optimisation of an existing agricultural irrigation system.

A Registration Certificate issued by the former Department of Water Affairs and Forestry (DWAF), in terms of the National Water Act, 1998, confirms that water use was registered for Portion 9 of the farm Uitvlucht 434 IR, situated within the Upper Vaal Water Management Area. The registered water use includes the taking of water from a water resource in terms of section 21(a) of the National Water Act for the sector “Agriculture: Irrigation”. The water resource is identified as the Suikerboschrand River, with the source recorded as river/stream. The registered annual volume for irrigation is recorded as 820 740 m³ per annum, effective from 1 April 2002.

This confirms that the property has had a long-standing registered agricultural abstraction from the Suikerboschrand River for irrigation purposes. The existing abstraction point and pumping infrastructure have therefore historically formed part of the agricultural operation on the property. The proposed balancing dams and hydropower-assisted irrigation system are intended to improve the management, storage, regulation and efficient use of this water within the existing agricultural operation.

The proposed off-channel balancing dams will allow water abstracted in accordance with the applicable lawful water-use entitlement and/or authorisation to be temporarily stored and managed more efficiently for irrigation purposes. This will reduce operational inefficiencies associated with direct abstraction and immediate irrigation demand and will allow for more controlled release and distribution of irrigation water across the cultivated areas. The balancing dams will also support improved scheduling of irrigation, better water availability during peak irrigation periods and improved operational resilience
.
The project therefore supports the continued use of the property for agriculture and does not seek to change the fundamental nature of the water use from agricultural irrigation. The development is aimed at improving the efficiency, reliability and sustainability of the existing irrigation system, while incorporating off-channel storage and energy-efficiency measures.

The existing registration does not remove the need to obtain any additional authorisations that may be required for the proposed storage and associated infrastructure. The necessary Water Use Licence process will address the proposed storage of water, any amendment or confirmation of the authorised abstraction arrangement, and any conditions required by the Department of Water and Sanitation. However, the existing registration is relevant to the assessment because it demonstrates that the abstraction of water for agricultural purposes is a long-standing use on the property and that the proposed development is linked to an established agricultural operation rather than a new unrelated water-use activity.

On this basis, the potential impacts associated with the abstraction component must be assessed in the context of an existing registered agricultural abstraction point and existing pumping infrastructure. The main change proposed by the project is the development of off-channel balancing storage and improved water distribution, rather than the establishment of a new abstraction point or a new agricultural water-use activity.

If yes, have you applied for the water use permit(s)?	YES X	
If yes, have you received approval(s)? (attached in appropriate appendix)		NO X

(Water Use License application is running concurrently with this application, managed by Eco Resource Managers. A separate public participation process will be conducted.)

3. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

The proposed irrigation system will be powered by a **renewable energy source**. The preferred proposal incorporates a hydropower-assisted system, whereby the movement of water through the irrigation system is used to generate power. This reduces reliance on conventional grid-supplied electricity from the municipality or Eskom and supports the implementation of a lower-carbon, energy-efficient agricultural operation.

If power supply is not available, where will power be sourced from?

Conventional power supply from the municipality or Eskom is not available (or only at a large cost), the project will source power from the proposed renewable hydropower-assisted system.

Water abstracted from the Suikerbosrand River, in accordance with the applicable lawful water-use entitlement and/or Water Use Licence requirements, will be pumped to the off-channel balancing dam system and thereafter released in a controlled manner through the irrigation system. The natural slope of the property allows the movement of water under gravity to be used to drive a hydro turbine / pump-as-turbine system for electricity generation.

The Suikerbosrand River provides an established water source for the existing agricultural operation, and the applicant has historically abstracted water from this resource for irrigation purposes. The proposed system will therefore use the existing water-use context and the site's topography to support renewable energy generation and reduce reliance on conventional grid-supplied electricity.

The hydropower-assisted system is intended to provide a renewable energy source for the irrigation operation. Where necessary, backup or supplementary power may be used to ensure operational continuity during periods of reduced flow, maintenance, abnormal river conditions, or other operational constraints. The primary power source for the proposed system will, however, be renewable energy generated through the movement of water within the hydropower-assisted irrigation system.

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The activity will utilize water from the Suikerbosrand River for the use in electricity generation. The elevation of the proposed project area will be utilized in performing hydropower assisted pumping from the river into the three (3) balancing dams. Water will run from the first dam into the second and finally the third. Each dam will be lower in elevation allowing the water to freely move over small hydro turbines as it moves from the one dam to the other. This will allow Binneplaas Boerdery to have a consistent and sustainable source of electricity for their agricultural operations.

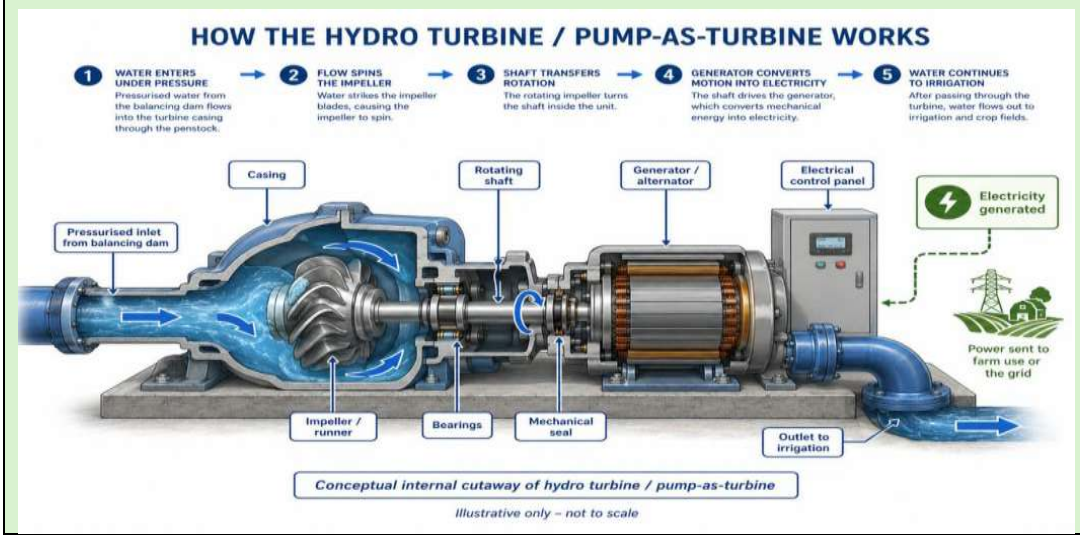
The cascading configuration creates hydraulic head and flow velocity as water moves from the upper to lower dams. This hydraulic energy will be harnessed through the installation of hydropower-assisted pumping technology, such as:

- Hydraulic ram pumps, and/or
- Inline micro-hydro turbine pumps

These systems generate mechanical and/or electrical power from flowing water, enabling partial or full self-powering of pump operations without reliance on grid electricity.

Recovered energy will be used to:

- Support abstraction pumping efficiency
- Power internal transfer pumps where required
- Reduce operational energy costs



Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N/A

ALTERNATIVE – SOLAR

Section D Alternative No. | Alternative 1 | (complete only when appropriate for above)

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? — Yes X

If yes, what estimated quantity will be produced per month? — Unknown

How will the construction solid waste be disposed of (describe)?

Limited quantities of general construction solid waste are anticipated, as the proposed activity does not involve decommissioning or demolition of existing structures. General construction waste may include packaging material, off-cuts, excess construction consumables, damaged materials and other incidental waste generated during the construction phase and the vegetation from the clearance of vegetation. These waste streams will be separated, temporarily stored in designated areas and removed from site by a suitable contractor for recycling, recovery or disposal at an appropriately authorised facility, where required. Waste records and safe disposal certificates will be maintained for audit purposes.

Other wastes that might arise include cable off-cuts, mounting-frame off-cuts, damaged panels, electrical components, concrete or foundation-related waste, and general construction waste. These waste streams would need to be separated, temporarily stored in designated areas and removed for recycling, recovery or disposal at an appropriately authorized facility. In addition, the solar alternative would introduce long-term waste-management considerations over the operational life of the project.

Where will the construction solid waste be disposed of (describe)?

- General and Construction waste will be disposed of at a licenced disposal site.
- Scrap steel material will be sold to licenced recyclers
- E-waste will be sold to licenced e-waste recyclers
- Vegetation waste will be sent to a municipal garden site or sent to organic waste composting facilities

Will the activity produce solid waste during its operational phase? — YES

If yes, what estimated quantity will be produced per month? — ±0.5 m^3

How will the solid waste be disposed of (describe)?

Once the solar farm is established, it will only generate waste from maintenance activities. Therefore, no significant waste is expected to be generated, particularly during the first 10 years of the operational phase.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity? — NO X

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Not Applicable. The waste emanating from the solar panels is mostly recyclable waste that will be sent to duly authorized service providers for recycling and beneficiation.

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? — NO X

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? — NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

The waste emanating from the solar panels is mostly recyclable waste that will be sent to duly authorized e-waste recyclers providers for recycling and beneficiation.

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	NO X
If yes, what estimated quantity will be produced per month?	m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	NO X

Will the activity produce any effluent that will be treated and/or disposed of on site?	NO X
If yes, what estimated quantity will be produced per month?	m^3

If yes describe the nature of the effluent and how it will be disposed.

Not Applicable

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?	NO X

If yes, provide the particulars of the facility:

Facility name:	
Contact person:	
Postal address:	
Postal code:	
Telephone:	Cell:
E-mail:	Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Not Applicable

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	NO X
If yes, what estimated quantity will be produced per month?	m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	NO X

Will the activity produce any effluent that will be treated and/or disposed of on site?	NO X

If yes describe how it will be treated and disposed off.

Not Applicable

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES X	
If yes, is it controlled by any legislation of any sphere of government?		NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Emissions will be generated only from the construction phase of the project. This will be caused by machinery associated with the construction of the solar farm. Once construction is completed, there will be no emissions into the atmosphere.

2. WATER USE

Indicate the source(s) of water that will be used for the activity

~~municipal~~	~~Directly from water board~~	~~groundwater~~	river, stream, dam or lake	~~other~~	~~the activity will not use water~~

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:	± 68 395 000 liters

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Does the activity require a water use permit from the Department of Water Affairs?	YES X	

If yes, list the permits required

The activity requires a Water Use License from the Department of Water and Sanitation. The activity will trigger 21 (a) “taking water from a water source”, as well as 21 (b) “storing water” within the National Water Act.

If yes, have you applied for the water use permit(s)?	YES X	
If yes, have you received approval(s)? (attached in appropriate appendix)		NO X

3. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

Renewable energy source

If power supply is not available, where will power be sourced from?

When there is inadequate solar irradiation, such as at night or during extended periods of cloud cover, the electricity produced by the proposed solar farm will be supported by electricity from the national grid.

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The solar farm uses a renewable and naturally occurring energy source to counteract dependency on fossil fuels and traditional grid electricity. The use of a solar farm to power the abstraction and pumping of water to off-channel storage dams is seen as energy efficient. Water can be extracted and transferred during times of peak solar output since solar energy generation usually corresponds with daytime irrigation demand and pumping requirements. This lowers greenhouse gas emissions related to energy use and operational electricity expenses. Additionally, by storing water in off-channel balancing dams, pumping operations can take place during the best times for solar generation, increasing total energy efficiency and relieving pressure on the country's electrical system.

Electricity generated from the solar farm will:

- Support abstraction pumping efficiency
- Power internal transfer pumps where required
- Reduce operational energy costs

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Not Applicable

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

No objections were received from adjacent landowners or surrounding land users. The comments received from Harold Steyn and Herme Smit indicated support for the proposed development, and the overall feedback from surrounding land users was positive.

The substantive comments received during the public participation process were primarily from the Gauteng Department of Environment and the Midvaal Local Municipality.

The Gauteng Department of Environment requested that the Final Basic Assessment Report:

- clearly confirm the applicable listed activities and describe how each activity relates to the proposed development;
- include Activity 12 of Listing Notice 3 in the application and assessment;
- include an archaeological and heritage assessment or compliance statement prepared by a suitably qualified specialist;
- present impact significance ratings after the application of mitigation measures;
- provide a proper assessment of feasible alternatives and a comprehensive assessment of the need and desirability of the development;
- include an A3 layout and sensitivity map showing the relevant environmental sensitivities in colour with a clear and legible legend;
- demonstrate that the public participation process complied with the EIA Regulations; and
- include a practical, site-specific and enforceable Environmental Management Programme.

The Midvaal Local Municipality confirmed that the property is zoned for agricultural purposes and is situated outside the Urban Development Boundary in an area identified as farms. The Municipality indicated that the proposed infrastructure could be accommodated as an ancillary use to the existing farming activities, provided that the hydropower infrastructure is used solely for private purposes. It further required that detailed building plans for the proposed structures comply with the applicable SABS/SANS standards and municipal building requirements. The Municipality also confirmed that the property is not affected by dolomite and requested registration as an interested and affected party.

No comments were received from the Department of Forestry, Fisheries and the Environment. Overall, no direct opposition to the proposed development was recorded, and the matters raised related mainly to regulatory compliance, the completeness of the assessment documentation, environmental sensitivity mapping, municipal planning requirements and the enforceability of the proposed mitigation measures

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)
(A full response must be provided in the Comments and Response Report that must be attached to this report):

All comments received during the public participation process were reviewed by the Environmental Assessment Practitioner and incorporated into the Final Basic Assessment Report, where relevant. The comments received from adjacent landowners were supportive of the proposed development, and no objections or specific environmental concerns were raised. These comments were noted and did not require amendments to the proposed layout, design or mitigation measures.

The comments received from the Gauteng Department of Environment were addressed through amendments and additions to the Final BAR. The applicable listed activities were clarified, and a description of how each activity relates to the proposed development was included. The application and Final BAR were also amended to include Activity 12 of Listing Notice 3. An Archaeological and Heritage Compliance Statement prepared by a suitably qualified specialist was included, and the impact assessment was updated to reflect the significance of impacts following the implementation of mitigation measures. The assessment of feasible alternatives and the need and desirability of the development were expanded.

An A3 layout and sensitivity map showing the relevant environmental sensitivities in colour with a clear legend was included, together with the supporting public participation documentation.

The EMPr was also included and reviewed to ensure that its mitigation measures are practical, site-specific and enforceable.

The comments received from the Midvaal Local Municipality were incorporated by confirming the agricultural zoning of the property, its location outside the Urban Development Boundary and the alignment of the development with the Midvaal Spatial Development Framework. The Final BAR clarifies that the dams and hydropower-assisted irrigation infrastructure are ancillary to the existing farming operation and that the electricity generated will be used for private agricultural purposes only. The requirement for detailed building plans to comply with applicable SABS/SANS standards and municipal building requirements was noted and included as a project implementation requirement.

No comments were excluded from consideration. Where comments confirmed information already contained in the Draft BAR, the information was verified and retained. No additional comments requiring changes to the assessment were received from the other notified authorities. The complete comments, responses and supporting correspondence are included in the public participation appendices to the Final BAR.

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts

The assessment methodology that was utilised in determining the significance of the potential impacts of the planned activities, on the biophysical and socio-economic environment is explained in the following sections. The methodology is broadly consistent to that described in Integrated Environmental Management Series.

In order to assess the significance as objectively as possible, the criteria as per the 1998 Department of Environmental Affairs and Tourism (DEAT) guidelines and the 2002 DEAT Information Series document was used as the basis for the assessment methodology adopted.

The methodology applied to the assessment of the significance of potential impacts is based on the assessment criteria provided within the 1998 DEAT guidelines and the 2002 DEAT Information Series document (Impact significance, Integrated Environmental Management, Information Series 5). The methodology has been adapted to be more user friendly and applicable to the industrial processes and a description of the nature, extent, duration, intensity, probability of the impact.

The significance of the impacts is determined through a synthesis of these criteria, ranking them as follows;

Significance Rating (SR)	Significance
350 - 600	Severe
200 – 349	High
150 - 199	Medium
0 – 149	Low

For each impact identified, the Significance Rating (SR) is determined by various factors. Significance is described prior to mitigation as well as with the most effective mitigation measure(s) in place where so required.

Duration	Guidelines	Value
Permanent	Permanent	10
Long term	As long as the facility is in operation	7
Medium term	5-10 years	5
Short term	0-4 years	3

Probability	Guidelines	Value

Definite	where the impact will occur regardless of any prevention measures	10
Highly probable	impact is likely to occur 11 – 15 times per year where it is most likely that the impact will occur (>70% and <90% sure)	8
Probable	it is probable that the impact will occur 5 to 10 times per year where there is a distinct possibility that the impact will occur (>40% and < 70% sure);	6
Improbable	impact occurs very rarely (less than 5 times) throughout the year where the possibility of the impact to materialise is very low, either because of design or historic experience (<40% sure)	3
Imposable	No risk	0
Extent	**Guidelines**	**Value**
International	Causes international impacts	10
National	Where the impact would have an impact on a national scale	9
Regional	Where the impact would extend to the region (municipal boundaries);	7
Local	Where the impact would be limited to the site and its immediate surroundings;	5
Immediate	extending only as far as the activity	3
Severity	**Guidelines**	**Value**
Highly significant	Causes irreparable damage	20
Severe	where natural or social functions or processes are altered to the extent that they will temporarily or permanently cease.	15
Major	where the affected environment is altered but natural and social functions and processes continue albeit in a modified way;	10
Minor	where the impact affects the environment in such a way that the natural and social functions and processes are affected in an insignificant manner. The impact is of low order and therefore likely to have little real effect	5
Mitigation	**Guidelines**	**Value**
Engineering controls	an engineering control such as bund walls or lock out valves to control the activity	-10%

Administrative	Procedure or work instruction that guides or manage the activity	-5%
Degree to which the impact can be reversed	**Guidelines**	**Value**
High	The impact can be reversed easily by applying little effort	-8%
Medium	The impact can be reversed by applying effective mitigation measures	-6%
Low	The chance of revering the impact is low and is not likely. However, by applying extensive measures the impact can be reversed	-4%
None	Cannot be reversed	0%

The **Significance Rating** is calculated as follows;

"*Risk (SR) = (Duration + Probability + Extent + Degree to which the impact may cause irreplaceable loss of resources) x Severity - (Mitigation + Degree to which the impact can be reversed).*"

The criteria is defined as follows;

- Duration – Refers to timeframe of the impact (how long will it last)
- Probability – Refers to the likeliness (chance) of the event occurring
- Extent – Refers to the scale of the impact in case the aspect results into impact (how far will the impact reach)
- Severity – Refers to the degree to which the impacts can change the environment
- Degree to which the impact may cause irreplaceable loss of resources
- Indirect impacts
- Mitigation – Refers to a control that can be implemented to reduce the significance of an
- environmental impact

Degree to which the impact can be reversed – refers to the chance that the impact can be reversed by applying mitigation measures

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the **construction phase** for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Proposal

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Construction Phase				
Vehicle exhaust emissions - air pollution	Low	Vehicles must not idle while not in use.	Low	Low
Dust generation from earthworks	Low	Ensure that dust suppression measures are implemented as far as reasonably practicable	Low	Low
Excavation and earthworks leading to erosion	Low	Install erosion control measures.	Low	Low

		Stabilize exposed surfaces quickly. Ensure stockpiled earthworks are screened and sold within a reasonable timeframe.		
Introduction of sediment, hydrocarbons, and contaminants into the river system	High	Maintain a buffer between the river and construction activities. Install sufficient stormwater channels. Clean any spillages with the appropriate spill kit immediately Ensure construction vehicles are well maintained.	Medium	High
Storage and use of hazardous substances including paint, grease, cleaning agents	Low	Ensure a buffer is maintained between construction activities and the river Spillages must be cleaned appropriately Only store hazardous substances within a designated area.	Low	Low
Clearance of vegetation	High	Minimize footprint of disturbance area. Clearly mark areas where vehicles are not allowed to enter, prior to construction commencing. Control the establishment of invasive species.	Medium	High
Bulk earthworks management	Medium	Ensure that the bulk earthworks are sorted and stored for a limited period of time Sell all earthworks generated from the project	Low	Medium
Poor general waste management - wind blown litter leading to nuisance conditions, burning of waste	Low	Store construction waste in a designated area Appropriate skips must be provided to store waste. Ensure that waste is	Low	Low

		removed and disposed at a licensed waste disposal site or suitable licensed recyclers. Hazardous and general waste must be managed separately Use only credible and authorised waste contractors to transport and manage waste. Burning of waste must be prohibited on site.		
personal injuries or health impacts on personnel	Low	All equipment used on site may only be operated by appropriately trained and / or licensed personnel. PPE and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, reflective vests, masks etc.). All personnel working on the project must operate in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA). Construction areas must be clearly demarcated at all times.	Low	Low
Temporary employment opportunities	Low- Positive	None	High-positive	High-positive
Operational Phase				
Emissions from maintenance activities	High-Positive	Maintain access roads.	High-Positive	High - Positive
Water abstraction may reduce downstream flows	High	Maintain the ecological reserve of the river. Monitor the abstraction volumes. Water stored in dams, that will not be utilized for irrigation, must be pumped back (unchanged) into the river	Medium	High

Potential entrapment of aquatic organisms at abstraction points	High	Install fish screens at abstraction points. Avoid abstracting during sensitive ecological periods.	Low	High
Seepage from dams may alter groundwater levels and quality	High	Install liner at the bottom of the dam. Monitor dam water levels	Medium	High
Standing water alters the quality of water stored	High	Monitoring of water quality regularly. Consider aeration if water will be standing for long periods of time. Ensure hydropower infrastructure is kept in good condition	Low	High
Nuisance conditions	High	Ensure general waste is stored in appropriate bins which are equipped with lids to prevent litter. Ensure general and hazardous waste is sorted at source and kept separate at all times. Ensure that general waste bins are not overflowing. Prohibit the burning of waste. Ensure that waste is disposed of at appropriate landfill sites. Records of disposal should be kept.	Low	Low
Wasteful use of water	Low	Ensure closed loop system is maintained Undertake regular maintenance on water infrastructure Ensure water use awareness amongst employees	Low	Low
Potential for drowning	Low	Restrict access to dams. Place clearly visible	Low	Low

		signs and warnings placed around the dams.		
Creation of additional employment opportunities and the continuation of current jobs.	High-Positive	None	High	High

Alternative 1 ***SOLAR POWER***

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Construction Phase				
Dust generation	Medium	Ensure that dust suppression measures are implemented as far as reasonably practicable	Low	Low
Vegetation clearance and habitat loss	High	Ensure the vegetation clearance is kept within the project area. Demarcate the area where solar panels will be constructed. Control the establishment of invasive species	Medium	Low
Decrease agricultural potential	High	Install the solar panels on low-value land. Minimize footprint. Implement agrivoltaics.	Medium	High
Electronic Waste	High	Ensure waste generated during construction is properly handled and stored onsite. Ensure waste is disposed of at appropriately licensed landfill site. Create a waste management plan	Medium	High
Regular maintenance of solar panels	High	Ensure waste is properly handled and stored onsite. Ensure waste is disposed of at appropriately licensed landfill site.	Low	Low
Visual impact	Low	Use anti-reflective solar panels Maintain ecological	Low	Low

		corridors		
Water wastage	Medium	Use dry cleaning methods where possible. Create a sustainable cleaning schedule.	Low	Medium
Occupational risks from the installation of solar panels	Medium	All equipment used on site may only be operated by appropriately trained and / or licensed personnel. PPE and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, reflective vests, masks etc.). All personnel working on the project must operate in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA).	Low	Low
The installation of solar panels would result in temporary job creation with no growth opportunities	High-Negative	N/A	High	High
Alternative 1- Operational Phase				
Minimal air emissions- Positive impact	High-Positive		High-Positive	High-Positive
Long-term occupation of land by solar infrastructure	Medium	Ensure solar farm activities are confined to the designated area. Implement agrovoltaic practices for agricultural and energy generation	Low	Medium
Noise accumulation from transformers and inverters	Low	Position noisy equipment away from sensitive receptors. Ensure equipment in maintained. Install shields to reduce noise emissions if required.	Low	Low
Increased electricity generation from renewable sources	High-Positive	None	High-Positive	High-Positive
Electronic Waste	High	Ensure waste is properly handled and	Medium	High

		stored onsite. Ensure waste is disposed of at apporpriately licensed landfill site. Create a waste management plan		
Cleaning of solar panels	Low	Utilize efficient water cleaning methods. Monitor the consumption of water utilized for panel cleaning.	Low	Low
Visual impact	Medium	Use anti-reflective solar panels Maintain ecological corridors	Low	Medium
Public safety	Low	Restrict access to solar farm Place clearly visible signs and warnings on the perimeter of the solar farm.	Low	Low
No extended job opportunities available for established solar farm.	High-Negative	None	High	High

No Go

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Leave site as is- no new jobs and no security of the continuation of the farm.	Negative	None	Severe	Severe
Agricultural potential of the property will remain the same and even decreased	Negative	None	High	High
Binneplaas Boerdery will be required to source electricity for irrigation from government owned entities	Negative	None	High	High
Decrease in the community's food security	Negative	None	High	High

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

The Engineering Design was used to inform the assessment of potential construction and operational impacts associated with the proposed infrastructure. The Biodiversity Assessment, including its risk assessment and

recommended mitigation measures, was also used to guide the identification, evaluation and management of potential impacts on the receiving environment. No other specialist reports were specifically used to complete the impact assessment tables. The specialist inputs obtained for the application otherwise remain limited to the applicable specialist compliance statements, which are attached under the relevant appendices.

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

The assessment was undertaken using the project information and engineering design available at the time of preparing the Final BAR, together with the findings, risk assessment and mitigation measures contained in the Biodiversity Assessment and the applicable specialist compliance statements. The assessment therefore assumes that the development will be constructed substantially in accordance with the assessed layout, dimensions, capacities and construction methodology, and that any refinements during detailed engineering will remain within the authorised development footprint and will not introduce new or materially different environmental impacts.

The following assumptions and limitations apply:

- the existing environmental conditions observed during the site investigations are representative of the general conditions on the property, although natural seasonal variations in vegetation, wetland conditions and species occurrence may occur;
- the identified biodiversity risks can be adequately managed through avoidance of sensitive features, restriction of disturbance to the approved footprint, rehabilitation and implementation of the specialist mitigation measures and EMPr;
- the abstraction volumes, dam capacities and operational arrangements will comply with the Water Use Licence and approved engineering design;
- construction will be undertaken using conventional methods and suitably maintained equipment, with appropriate controls for erosion, stormwater, dust, noise, waste, spills and rehabilitation;
- the applicant, contractors and operational personnel will implement the EMPr and all conditions of the Environmental Authorisation, Water Use Licence and other applicable approvals; and
- no material change to the project scope, footprint or technology will occur without prior environmental review and, where required, approval from the relevant competent authority.

Detailed construction specifications, final levels and minor infrastructure alignments may be refined during the final engineering phase. These refinements are not expected to alter the conclusions of the impact assessment, provided that they remain within the assessed footprint and comply with the prescribed mitigation measures. Should previously unidentified sensitive biodiversity features, heritage resources or other environmental constraints be encountered during construction, work within the affected area must cease and the relevant specialist and competent authority must be consulted before work resumes.

No material gaps in knowledge were identified that would prevent the competent authority from making an informed decision. The conclusions remain subject to compliance with the approved engineering design, the Water Use Licence, the EMPr and the biodiversity mitigation measures.

IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Proposal

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Vehicle exhaust emissions - air pollution	Low	All vehicles and equipment are to be well maintained in accordance to manufacturer specifications. Idling of vehicles should be restricted	Low	Low
Stormwater – Pollution of Natural resources	Low	All parked vehicles must be equipped with drip trays. Vehicle inspections should be undertaken on a regular basis in order to identify traces of leaks. Spill kits must be available on site for the clean-up of spills	Low	Low

		as they occur. An incident register must be kept up to date throughout the decommissioning phase.		
Noise Pollution as a result of decommissioning activities.	Low	Employees and operators conducting work on site must be equipped with appropriate hearing protection. Noise generating activities must be limited to normal operating hours. An external complaints register must be kept up to date throughout the decommissioning phase of the project.	Low	Low
Waste Management	Low	Only licensed and registered waste transporters are to accept waste. Recycling must be prioritised as far as reasonably possible. Safe disposal certificates and must be obtained for all waste loads which leave the site	Low	Low
Socio Economic- Loss of employment	Medium	Engagement with employees in advance. Redistribute employees to other operational units as far as possible.	Low	Medium

Alternative 1

Potential impacts:	**Significance rating of impacts(positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Vehicle exhaust emissions - air pollution	Low	All vehicles and equipment are to be well maintained in accordance to manufacturer specifications. Idling of vehicles should be restricted	Low	Low
Stormwater – Pollution of Natural resources	Low	All parked vehicles must be equipped with drip trays. Vehicle inspections should be undertaken on a regular basis in order to identify traces of leaks. Spill kits must be available on site for the clean-up of spills as they occur. An incident register must be kept up to date throughout the decommissioning phase.	Low	Low
Noise Pollution as a result of decommissioning activities.	Low	Employees and operators conducting work on site must be equipped with appropriate hearing protection. Noise generating activities	Low	Low

		must be limited to normal operating hours. An external complaints register must be kept up to date throughout the decommissioning phase of the project.		
Waste Management- Electronic waste	Medium	Store electronic waste in appropriate skips. Ensure waste removal is conducted by a licensed waste disposal site or suitable licensed contractor. Electronic waste must be handled separately from general waste.	Low	Medium
Waste Management- General waste	Low	Only licensed and registered waste transporters are to accept waste. Recycling must be prioritised as far as reasonably possible. Safe disposal certificates and must be obtained for all waste loads which leave the site	Low	Low
Socio Economic- Loss of employment	Medium	Engagement with employees in advance. Redistribute employees to other operational units as far as possible.	Low	Medium

Alternative 2

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
N/A				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

None – the specialists involved related only to the Compliance Statements.

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Not Applicable

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

The principal potential cumulative impact relates to water abstraction from the Suikerbosrand River. Although the proposed development is associated with an existing registered agricultural water use and the dams will be constructed off-channel, abstraction occurring together with abstraction by other upstream and downstream users may contribute to reduced river flows, particularly during low-flow periods, droughts or periods of increased climate variability. Reduced flows may affect the ecological functioning of the river, aquatic habitat and the availability of water to downstream users. This cumulative impact could become significant if abstraction is not controlled. It must therefore be managed through compliance with the Water Use Licence, maintenance of the ecological reserve, monitoring and recording of abstraction volumes, and restrictions on abstraction during environmentally sensitive or low-

flow periods. The existing registered abstraction is for agricultural irrigation, and the proposal is intended to improve and optimise the existing water-use system rather than establish an unrelated new water use.

Construction-related erosion, sedimentation and pollution may also contribute cumulatively to existing pressures on the river and surrounding wetland features. Individually, minor sediment runoff, hydrocarbon spills or disturbed soil may have a limited impact; however, when combined with agricultural runoff, erosion from cultivated land, existing riverbank disturbance and other activities within the catchment, these impacts may progressively reduce water quality and aquatic habitat condition. The engineering design, including the off-channel location, lined dam compartments and controlled spillway arrangements, reduces this risk. Further controls must include maintaining buffers from watercourses, installing appropriate stormwater and erosion-control measures, stabilising exposed surfaces, managing stockpiles, preventing contaminated runoff and rehabilitating disturbed areas promptly. The proposed works will occur outside the delineated watercourse and will not involve excavation or material removal from the riverbed or banks.

The development footprint is situated mainly within previously cultivated and transformed agricultural land. Nevertheless, incremental vegetation clearance associated with this project, when considered together with historical and future agricultural transformation in the surrounding area, could contribute to habitat loss, fragmentation of ecological corridors, disturbance of fauna and the spread of invasive alien species. These cumulative biodiversity effects are particularly relevant because the broader property contains environmentally sensitive features. The impact is expected to remain limited provided that disturbance is confined to the approved footprint, sensitive features and ecological corridors are avoided, unnecessary clearing is prohibited, alien invasive species are controlled and all temporarily disturbed areas are rehabilitated in accordance with the Biodiversity Assessment and EMPr. No significant residual biodiversity impact is anticipated where these measures are implemented.

Temporary dust, noise and construction traffic will add to emissions and vehicle movements generated by normal farming activities and any other construction occurring in the surrounding agricultural area. Although these impacts are unlikely to be significant individually, simultaneous activities could temporarily increase nuisance conditions, road-safety risks and disturbance to neighbouring land users. These impacts will be localised and short-term and can be controlled through dust suppression, speed limits, appropriate working hours, maintenance of vehicles and equipment, designated access routes and effective complaints management.

The permanent conversion of approximately 3.2 hectares of agricultural land to dam and associated infrastructure may contribute incrementally to the loss of productive or open land in the area. This impact is moderated by locating the infrastructure within an existing agricultural operation, using a compact cascading design suited to the natural topography and avoiding the larger land transformation that would be associated with the solar alternative. The stored water will support the productive use of the remaining agricultural land, and the overall cumulative agricultural effect is therefore expected to be positive.

Positive cumulative impacts include improved irrigation reliability, increased and more stable agricultural production, support for food security, continued employment and increased economic activity within the agricultural value chain. The hydropower-assisted system will also reduce reliance on conventional grid-supplied electricity and contribute incrementally to energy efficiency and climate-change resilience.

Overall, the cumulative negative impacts are expected to be **low after mitigation**, provided that the development remains within the approved footprint and is implemented in accordance with the engineering design, Biodiversity Assessment, EMPr and Water Use Licence. The cumulative water-resource impact requires the greatest ongoing attention because its significance depends not only on this development but also on catchment-wide abstraction, climatic conditions and the activities of other water users.

Should appropriate mitigation and management measures be implemented (as prescribed in the Environmental Management Program (EMPr), attached to this report under **Appendix H**, the risks as identified would be limited.

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal

During the project's construction and operation, it is expected that the planned construction of cascading off-channel balancing dams, related river abstraction infrastructure, hydropower-assisted pumping systems, and increased irrigation operations near the Suikerbosrand River will have both positive and negative environmental effects.

Temporary vegetation clearing, soil disturbance, dust production, noise from building equipment, increased vehicle movement, and possible effects on surface water resources owing to erosion and sedimentation are all possible drawbacks of the construction phase. However, if the suggested mitigation strategies included in the Environmental Management Programme (EMPr) are successfully carried out, these effects are regarded as limited, transient, and of low to moderate consequence.

A section of agricultural land may be permanently altered throughout the project's operational phase in order to build balancing dams and related infrastructure. Inadequate management of water abstraction from the Suikerbosrand River could also change the hydrological dynamics in the area. To ensure sustainable abstraction volumes and aquatic resource protection, the Department of Water and Sanitation will regulate the proposed abstraction and storage activities through the Water Use Licence process.

The project's use of renewable hydropower-assisted pumping technology greatly lessens dependency on fossil fuel-based energy production and traditional grid electricity. This has a good impact on climate resilience, energy efficiency, and sustainable farming methods. The development is further expected to provide positive socio-economic benefits through temporary and permanent employment opportunities, stimulation of the local economy and improved agricultural productivity and food security.

The proposed development can be carried out in an environmentally acceptable manner, provided that all suggested mitigation measures and management actions are implemented throughout the project's construction and operational phases, according to the results of the Basic Assessment process and specialist input received thus far.

Alternative 1

On agricultural land next to the Suikerbosrand River, **Alternative 1** calls for the construction of a solar-powered water abstraction and storage system. Like the proposal, the alternative will have short-term effects related to construction, such as soil movement, noise emissions, dust production, vegetation disturbance, and increased traffic.

In order to power water abstraction and pumping systems, Alternative 1's operational phase will entail building and running solar photovoltaic infrastructure. Although using solar energy is a sustainable and renewable energy source that lessens reliance on traditional electricity generation and the greenhouse gas emissions that go along with it, compared to the proposal, the larger development footprint needed for the solar farm may result in a greater degree of land transformation.

The installation of solar panels and related equipment may have potential effects related to glare, visual intrusion, and further vegetation clearing. However, by following the Environmental Management Programme (EMPr) and putting suitable mitigation measures in place, these effects are thought to be manageable.

Alternative 1 offers a number of favourable socioeconomic and environmental advantages, such as lower operating energy costs, more effective irrigation, increased agricultural production, and a contribution to the use of renewable energy in the agriculture industry. Additionally, using solar energy supports national goals for climate change mitigation and sustainable development.

As long as all suggested mitigation and management strategies are put into practice, Alternative 1 is deemed environmentally acceptable based on the results of the Basic Assessment process, however not preferred in this site specific project.

Alternative 2

Not Applicable

No-go (compulsory)

The option to forego the planned construction of the cascading off-channel balancing dams, related river abstraction infrastructure, hydropower-assisted irrigation system, and Alternative 1 solar-powered abstraction system on the agricultural land next to the Suikerbosrand River is known as the "no-go alternative."

Under the no-go option, the property's current agricultural operations would carry on without the addition of new infrastructure for water abstraction, storage, or renewable energy. Therefore, there would be no short-term environmental effects from building, such as soil disturbance, increased traffic, noise emissions, dust production, vegetation clearance, and earthworks. Additionally, there would be no further changes made to the agricultural area, and the site's current environmental features would essentially not alter.

Additionally, the no-go option would prevent any possible effects related to dam or solar infrastructure construction, river abstraction, and changes to local hydrological dynamics. Nevertheless, the applicant would be unable to increase the property's agricultural production and irrigation dependability if the no-go option were chosen. Additionally, there would be no chance to make use of renewable energy technology like solar-powered abstraction systems and hydropower-assisted pumps.

Furthermore, the development's positive socioeconomic effects would not materialise. These include potential for short-term work during construction, long-term employment in agriculture, local economic stimulus, increased capacity for food production, and less reliance on traditional electricity sources.

Therefore, the no-go option would preserve the existing environmental baseline but would not offer the agricultural and socioeconomic advantages linked to Alternative 1 and the proposal. The no-go option is viewed as less desirable from a sustainability standpoint since it would restrict prospects for increased agricultural productivity, the use of renewable energy, and long-term local economic growth.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

The proposed activity will utilise a portion of the property that has historically been disturbed and cultivated for agricultural purposes. The development footprint is therefore located within an already transformed agricultural setting and has been selected to avoid, as far as reasonably practicable, unnecessary disturbance to undisturbed or sensitive areas. The proposed off-channel balancing dams, abstraction infrastructure and hydropower-assisted irrigation system will improve the reliability of irrigation water supply to Binneplaas Boerdery and will support improved agricultural productivity, operational sustainability and food security.

Based on the findings of the Basic Assessment process and the specialist input obtained to date, the environmental impacts associated with the proposal are expected to be limited and manageable, provided that the mitigation measures contained in the EMPr are implemented during both the construction and operational phases. The anticipated construction-phase impacts relate mainly to temporary soil disturbance, earthworks, construction traffic, dust generation, noise and the handling of excavated material.

These impacts are expected to be localised, short-term and reversible, and can be adequately managed through standard construction environmental management measures, including dust suppression, controlled working hours, demarcation of the construction footprint, erosion control, responsible stockpiling and rehabilitation of disturbed areas.

- No significant additional operational noise impacts are anticipated, as the proposed activity will form part of the existing agricultural operation and will not introduce a high-noise industrial process. Any construction-related noise will be temporary in nature and can be managed through the implementation of appropriate working hours, equipment maintenance and site management controls.

- No significant residual biodiversity impact is expected. The affected area has been previously cultivated and the proposed layout avoids unnecessary encroachment into sensitive environmental features. Any vegetation clearance will be limited to the approved development footprint and will be controlled through the EMPr. Disturbed areas outside the final operational footprint must be stabilised and rehabilitated as soon as reasonably practicable after construction.

- Dust emissions may occur during site clearance, excavation, embankment construction, vehicle movement and material handling. However, these emissions are expected to be temporary and localised. With the implementation of mitigation measures such as dust suppression, speed control, stabilisation of exposed surfaces and responsible stockpile management, dust impacts are expected to remain acceptable and are unlikely to result in a significant nuisance to surrounding landowners.

- The project will have positive socio-economic and agricultural impacts. The improved availability and reliability of irrigation water will enable the applicant to increase agricultural yield, improve crop production stability and support the continued economic viability of the farming operation. This will contribute positively to local food production, job security and the broader agricultural value chain.

- Potential water-resource impacts will be managed through the Water Use Licence process and the implementation of licence conditions issued by the Department of Water and Sanitation. The proposed balancing dams are off-channel storage facilities and will be operated as part of an irrigation system. The movement and turnover of water through the system, together with appropriate operational management, will reduce the potential for stagnation. No significant adverse water-quality impact is anticipated, provided that the dams are operated and maintained in accordance with the approved design, the Water Use Licence and the EMPr.

- Excavated material generated during construction will, where suitable, be reused on site for embankment construction, shaping, levelling and rehabilitation. The beneficial reuse of suitable excavated material is consistent with the waste management hierarchy, as it reduces the need for off-site disposal, limits the importation of additional fill material and promotes resource efficiency. Any unsuitable surplus material will be turned into a valuable construction material to be re-purposed off site and re-used.

- The proposed use of a hydropower-assisted pumping / irrigation system is regarded as a positive design element, as it supports improved energy efficiency and reduces reliance on conventional grid-supplied electricity. The incorporation of renewable or energy-recovery technology into the irrigation system is aligned with sustainable agricultural practices and contributes to reduced operational energy demand.

Overall, the proposal is considered environmentally acceptable, subject to the implementation of the EMPr, compliance with the Water Use Licence and adherence to the approved engineering design. The preferred alternative provides an appropriate balance between environmental protection, agricultural productivity, water-use efficiency, energy efficiency and socio-economic benefit.

For alternative:

The solar-powered alternative would also provide environmental and operational benefits, particularly in relation to renewable energy use, climate-change mitigation and reduced reliance on conventional grid-supplied electricity. The use of solar power would support a lower-carbon irrigation system and would be aligned with broader sustainable agricultural and renewable-energy objectives.

However, when compared to the preferred hydropower-assisted irrigation system, the solar alternative would require a larger physical development footprint. This would result in a greater area of vegetation clearance and additional disturbance to land that could otherwise remain available for agricultural use or remain undisturbed. The larger footprint would also increase construction-related impacts, including soil disturbance, dust generation, stormwater management requirements and the need for rehabilitation of disturbed areas.

The solar alternative would also introduce additional long-term waste-management considerations. Solar panels, inverters, batteries where applicable, cables and associated electrical infrastructure have finite operational lifespans and would require future replacement, maintenance and lawful disposal or recycling. This may result in electronic waste and other waste streams over the lifetime of the project, which would require appropriate management in accordance with applicable waste-management requirements.

Although the solar alternative remains a feasible renewable-energy option and has clear climate-change benefits, the site conditions lend themselves more favourably to the preferred hydropower-assisted system. The natural slope and topography of the property provide an opportunity to utilise gravity, water movement and hydraulic head within the proposed irrigation system. This allows the project to incorporate renewable or energy-recovery technology without requiring a separate solar-energy development footprint of similar scale.

On balance, the hydropower-assisted irrigation system is considered the preferred alternative in this specific case. It provides renewable-energy and climate-change benefits while reducing the extent of vegetation clearance, limiting additional infrastructure requirements, avoiding long-term solar-panel and associated e-waste management concerns, and making practical use of the natural slope of the property.

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

Having assessed the significance of the impacts associated with the proposal, Alternative 1 and the no-go

alternative, the proposal is considered to represent the preferred alternative and the most appropriate balance between environmental, technical, social and economic considerations.

The **preferred proposal** entails the development of cascading off-channel balancing dams, associated abstraction infrastructure and a hydropower-assisted irrigation system on land that has historically been cultivated and transformed for agricultural use. The proposed activity will therefore be located within an existing agricultural setting and will support the continued and improved productive use of the property. The assessment indicates that the anticipated negative impacts, including temporary construction-related dust, noise, soil disturbance, vegetation clearance and traffic impacts, will be localised and manageable through the implementation of the mitigation measures contained in the EMPr. No significant residual biodiversity, noise or air-quality impacts are expected, provided that the approved development footprint is adhered to and the prescribed mitigation measures are implemented.

The preferred proposal will provide clear operational and socio-economic benefits. These include improved irrigation reliability, increased agricultural yield, enhanced food-production capacity, improved operational sustainability and support for employment and economic activity associated with the farming operation. The proposed use of hydropower-assisted pumping / irrigation technology is also considered positive from a climate-change and energy-efficiency perspective, as it will reduce reliance on conventional grid-supplied electricity and make beneficial use of the natural slope and hydraulic conditions of the property.

Alternative 1, being a solar-powered abstraction and storage system, is also recognised as an environmentally acceptable renewable-energy option. It would support climate-change mitigation and reduce reliance on conventional electricity. However, this alternative would require a larger physical footprint for solar infrastructure, resulting in additional vegetation clearance, increased land disturbance and greater loss of agricultural or open land. It would also introduce long-term waste-management considerations associated with the maintenance, replacement and eventual disposal or recycling of solar panels, inverters, batteries where applicable, cables and other electrical components. These waste streams would require specific management over the lifetime of the project.

The no-go alternative would avoid the short-term construction-phase impacts associated with the proposal and Alternative 1. However, it would also prevent the applicant from improving irrigation reliability and agricultural productivity. It would remove the opportunity to improve water-use efficiency, incorporate renewable or energy-recovery technology, increase agricultural yield, support food security and strengthen the long-term economic viability of the farming operation. The no-go alternative is therefore not considered desirable from a sustainability, agricultural productivity or socio-economic perspective.

The preferred proposal is therefore selected because it achieves the project need and desirability while limiting environmental impacts to an acceptable level. It makes use of the natural topography of the site, requires a smaller energy-infrastructure footprint than the solar alternative, avoids the additional long-term e-waste considerations associated with solar infrastructure, and provides direct benefits in relation to agricultural productivity, food security, energy efficiency and climate-change resilience. Subject to compliance with the EMPr, the Water Use Licence and the approved engineering design, the proposal is considered environmentally acceptable and is recommended as the preferred alternative.

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

The project does not fall within the Gauteng EMF Zone 5. The DFFE screening tool report was also generated and indicated that the overall spatial sensitivity of the site is low to medium. (**Appendix I1**).

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).	YES X	

If “NO”, indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

Not Applicable

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

1.	**Approved development footprint and design** The development must be undertaken substantially in accordance with the approved layout plans, engineering design and specifications assessed in the Final BAR. Construction must be restricted to the authorised development footprint. Any material change to the location, footprint, capacity, dam-wall height, abstraction infrastructure, hydropower system or associated infrastructure must be assessed by the Environmental Assessment Practitioner and submitted to the competent authority for approval, where required.
2.	**Environmental Management Programme** The approved Environmental Management Programme must be implemented throughout the pre-construction, construction, operational, maintenance and decommissioning phases.
3.	**Water-use authorization** No water abstraction from the Suikerbosrand River or storage of water within the proposed balancing dams may commence until the necessary Water Use Licence has been granted by the Department of Water and Sanitation or in line with the existing approvals. All abstraction and storage must remain within the volumes, timing restrictions and other conditions specified in the Water Use Licence.
4.	**Protection of river flows and aquatic ecology** Abstraction volumes must be measured, recorded and monitored. The ecological reserve and any minimum flow requirements specified by the Department of Water and Sanitation must be maintained. Abstraction must be reduced or suspended during low-flow or environmentally sensitive periods where required by the Water Use Licence.
5.	**Abstraction infrastructure** The abstraction point must be designed and operated to minimise the entrapment or injury of aquatic organisms. Suitable screens must be installed and maintained at the intake, and abstraction infrastructure must be inspected regularly to confirm that it remains functional and environmentally compliant.
6.	**Protection of watercourses and sensitive areas** No unauthorised excavation, infilling, deposition, stockpiling or movement of material may occur within the Suikerbosrand River, its bed or banks, or any delineated wetland or watercourse. Construction activities must remain outside the identified sensitive areas and applicable buffers, except where specifically authorised. The proposed dams must remain off-channel.
7.	**Biodiversity mitigation** All mitigation measures contained in the Biodiversity Assessment and associated risk assessment must be implemented. Vegetation clearance must be limited to the approved footprint, and unnecessary disturbance of natural vegetation, ecological corridors and sensitive habitat must be prohibited. No fauna may be intentionally harmed, captured or removed, except by a suitably qualified person where relocation is necessary.
8.	**Pre-construction demarcation** The authorised construction footprint, no-go areas, watercourse buffers, access routes, stockpile areas and contractor laydown areas must be clearly demarcated or set out and agreed to, before construction commences. All personnel must be informed of these restrictions during environmental induction.
9.	**Waste and excavated material management** Suitable excavated material should, as far as reasonably practicable, be reused for embankment construction, shaping, levelling and rehabilitation. Unsuitable or surplus material must be reused or removed to an appropriately secondary or beneficial use.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT (as per notice 792 of 2012, or the updated version of this guideline)

Responsible and safe abstraction of water is crucial to prevent accidents, injuries, environmental damage, and legal repercussions. It's not just a matter of compliance, but also a fundamental aspect of protecting human health and the environment.

Socio-economic Impact of the proposed project
The project will create new opportunities for employment and allow Binneplaas Boerdery to increase their productivity and decrease economic losses. The sustainable focus of the project will allow Binneplaas Boerdery to ensure food security for the community.

Environmental responsibility

The environmental right is contained in the Constitution of the Republic of South Africa, Act 108 of 1996 (hereafter referred to as "The Constitution") Section 24 of the Constitution enshrines environmental rights in South Africa, which are interpreted to have a two-fold purpose. The first part guarantees a healthy environment to every person. The second part mandates that the State ensures compliance with the first part. The State is prohibited from infringing on the right to environmental protection and is further required to provide protection against any harmful conduct towards the environment. It is expected that the proposed project will have low environmental impacts.

However, any impacts identified will be investigated in detail during the impact assessment phase of the project. Measures to mitigate the impacts of the project have also be identified and investigated during the impact assessment phase of the project. The mitigation measures include designs and management practices that will be embarked on, to prevent and/or minimize the impacts on the social, cultural, and environmental aspects. These mitigation measures are described in more detail in the EMPr that Bi

eplaas Boerdery will be required to comply with throughout the life of the project. The EMPr also include environmental monitoring program that will allow Binneplaas Boerdery to keep track of the impacts of the project on the environment and where required, to take remedial action.

Needs and Desirability as per Government Regulation Notice 792 of 2012

DEA (2017), Guideline on Need and Desirability, says that when evaluating project specific applications, the strategic context of such applications and the broader societal needs and the public interest should be considered. The contents of Municipal Integrated Development Plans (IDP), Strategic Development Frameworks (SDF), Environmental Management Frameworks (EMF) and other relevant plans frameworks and strategies must be taken into account.

Whether a proposed activity will be in line with or deviate from the plan, framework, or strategy per se is not the issue, but rather the ecological, social, and economic impacts that will result because of the alignment or deviation". Where an application deviates from a plan, framework, or strategy the EIA must show why the deviation might be justifiable. Considering the merits of a specific application in terms of the need and desirability consideration, it must be decided which alternative represents "the most practicable environmental option", which in terms of the definition in NEMA and the purpose of the EIA Regulations are "that option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long-term as well as the short-term."

The proposed project is aligned with the SDF, EMF and IDPs for the area.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED
(CONSIDER WHEN THE ACTIVITY IS EXPECTED TO BE CONCLUDED)

Construction activity – ± 7 - 12 Months
Operational period – Forceable future (at least 10 - 15y

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers “Yes” to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached	Yes **X**

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

☒ Where requested, supporting documentation has been attached;

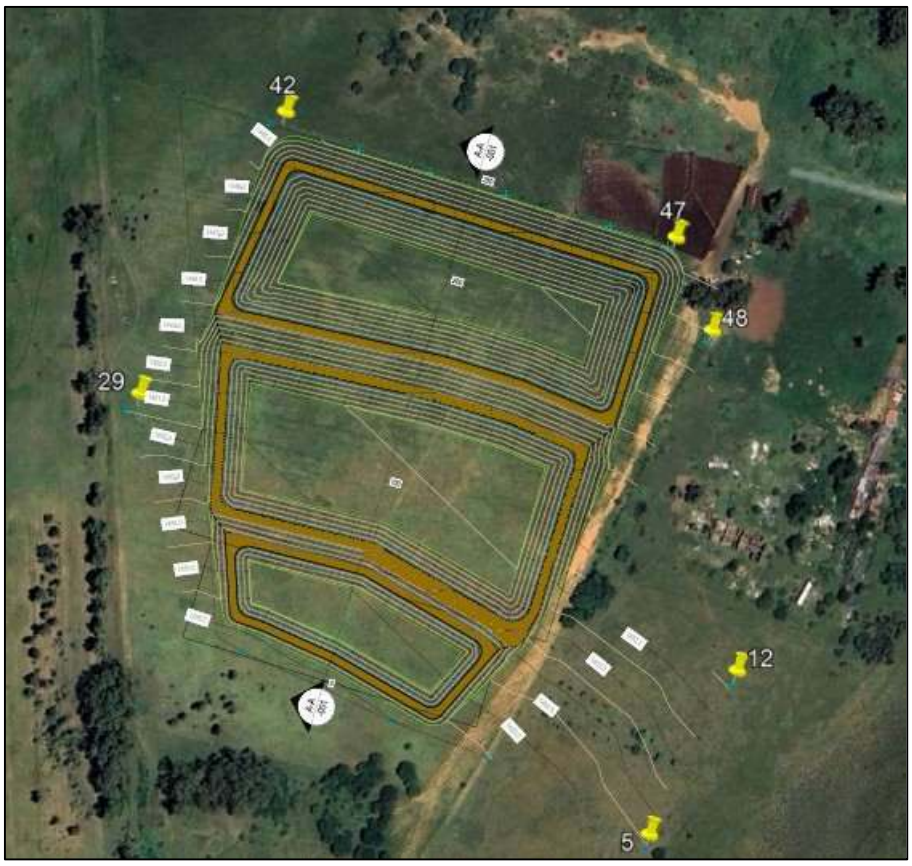
☒ All relevant sections of the form have been completed.

Appendix A

Site Plan

DESIGN REPORT

UITVLUGT BALANCING DAM
(PROPOSED LINED BALANCING DAM)



PREPARED FOR

Koningskraal Boerdery (Pty) Ltd

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PREPARED BY

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FEBRUARY 2026

Project No: 336/2026
Report No: 336/2026/UBD

REVISION 00

DOCUMENT CONTROL SHEET

Designed, compiled, and approved by:	Francois Joubert Pr Tech Eng	**2026/02/16** Date
Accepted by:	On behalf of Client	Date

Revision	Description	Date Issued	Revision by
00	Issued to support legal applications	2026/02/16	MFJ

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Design Report for the proposed Uitvlugt Balancing Dam

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LIST OF ABBREVIATIONS

APP	Approved professional person
EPP	Emergency preparedness plan
FSL	Full supply level
HRU	Hydrological Research Unit
K	Regional coefficient
MAP	Mean annual precipitation
masl	Meter above sea level
NOC	Non-overspill crest
NWA	National Water Act, Act 36 of 1998
OMM	Operation and maintenance manual
PMF	Probable maximum flood
PMP	Probable maximum precipitation
RDD	Recommended design discharge
RDF	Recommended design flood
RI	Recurrence interval
RL	Reduced level
RMF	Regional maximum flood
SANCOLD	South African National Committee on Large Dams
SCS	Soil Conservation Service
SED	Safety evaluation discharge
SEF	Safety evaluation flood

LIST OF REFERENCES:

The references stated below were used in the report.

	Document Title	Preparer / Author	Document Number	Revision or Date of Issue
1. Legislative Requirements				
[1]	The National Water Act	NWA	Act of 36	1998
[2]	The National Environmental Management Act	NEMA	Act of 107	1998
[3]	Regulation Gazette No. 35062	NWA	Government Notice (GN) R139	2012
2. National Standards and Information				
[4]	Guidelines on Safety in Relation to Floods	SANCOLD	Report no 4	1991
[5]	GIS information: WRC2012	WRC		2012
[6]	Software: Design Rainfall Estimation in South Africa	Smithers and Schulze	K5/1060	2002
[7]	Regional Maximum Flood Peaks in Southern Africa, Department of Water Affairs	DWA	TR137	1988
3. Technical Guidelines				
[1]	Drainage Manual 6th Edition	SANRAL		2012
[2]	Best Practice Guideline G1 Storm Water Management	DWAF	BPG 1	2006

1 INTRODUCTION

1.1 Background

It is the intention of the owner (Koningskraal Boerdery (Pty) Ltd) to build a new balancing dam on their property. The proposed new Uitvlugt Balancing Dam will be a lined, off channel storage dam consisting of three (3) compartments. The three compartments were necessitated by the natural topography in order to keep the dam's maximum wall heights below 5 meters. The dam will be situated on the farm Uitvlugt 434 IR, approximately 13 kilometres southeast of Vereeniging, in the Sedibeng District of the Gauteng Province. The dam will be fed by allocated water pumped from the Suikerbosrant River.

The centre co-ordinates of the dam are Latitude **26º 41' 45.0" S** and Longitude **28º 02' 13.9" E**. Refer to map images below as well as **Appendix A** (Topographical map image) for the location of the dam.

Figure 1-1: Google Aerial Image (showing proposed dam position in relation to Vereeniging)

The proposed dam will be lined with a HDPE liner and will cover a total surface area of roughly **3.2ha** in order to store an achievable capacity of **107 976m³**. The dam embankments will consist of homogenic earthfill structures with maximum wall heights above the lowest natural ground level (NGL) mot exceeding 5. The dam will also be positioned outside the 1:100-year flood zone as well as outside the required ecological buffer zone. It was decided on this specific location to have the minimum impact on the environment as the dam will be constructed where old, cultivated crops fields were. Refer to image below for location. The three compartments, i.e. Compartment 1, 2 and 3, are shown on the aerial image in **Figure 1-2** below for reference in the report.

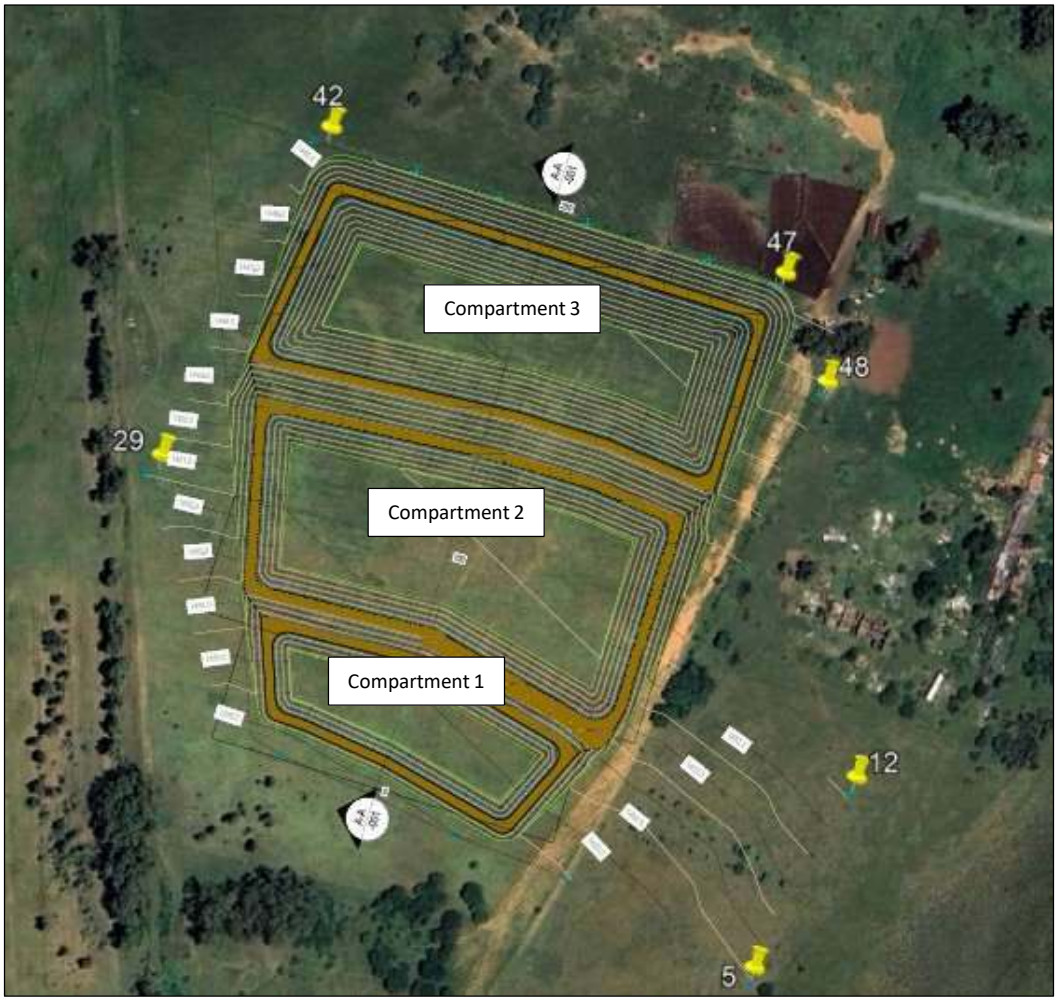


Figure 1-2: Google Aerial Image (showing the location of the proposed lined dam)

1.2 Purpose of report

The purpose of this report is:

- To serve as a design document for the construction of the proposed Uitvlugt Balancing Dam.
- To realistically estimate the quantities and costs of the proposed works.
- To make further decisions in this regard.
- To apply for approvals from DWS and LEDET in terms of the required licenses / authorizations.

1.3 Main features of the proposed dam

Compartment 1 (south)

Gross storage capacity	**10 764m^3**
Water surface area at FSL	**8 653m^2**
Crest level of non-overspill	**CL 1457.00**
Full supply level	**CL 1456.50**
Lowest ground level (outside at toe)	**CL 1454.20**
Average basin excavation level	**CL 1454.10**
Maximum wall height above NGL	**2.8m**
Average water depth above	**2.40m**
NOC crest width	**4.0m**
Perimeter crest length (including dividing wall)	**339m**
Upstream (inside) slope	**1(V)2.5(H)**
Downstream (outside) slope	**1(V)2.5(H)**
Type of spillway	**Gabion lined Chute**
Total Freeboard	**0.5m**
Spillway control section width	**2.0m**
Outlet works	**None - water to spill into Compartment 2**

Compartment 2 (middle)

Gross storage capacity	**49 459m^3**
Water surface area at FSL	**43 408m^2**

Crest level of non-overspill	**CL 1454.20**
Full supply level	**CL 1453.70**
Lowest ground level (outside at toe)	**CL 1449.3**
Average basin excavation level	**CL 1449.00**
Maximum wall height above NGL	**4.90m**
Average water depth above	**4.70m**
NOC crest width	**4.0m**
Perimeter crest length (including dividing walls)	**523m**
Upstream (inside) slope	**1(V)2.5(H)**
Downstream (outside) slope	**1(V)2.5(H)**
Type of spillway	**Gabion lined Chute**
Total Freeboard	**0.5m**
Spillway control section width	**2.0m**
Outlet works	**None - water to spill into Compartment 3**

Compartment 3 (north)

Gross storage capacity	**61 909m^3**
Water surface area at FSL	**55 914m^2**
Crest level of non-overspill	**CL 1449.20**
Full supply level	**CL 1448.70**
Lowest ground level (outside at toe)	**CL 1444.30**
Average basin excavation level	**CL 1441.40**
Maximum wall height above NGL	**4.90m**
Average water depth above	**7.3m**
NOC crest width	**4.0m**
Perimeter crest length (including dividing wall)	**538m**
Upstream (inside) slope	**1(V)2.5(H)**
Downstream (outside) slope	**1(V)2.5(H)**
Type of spillway	**Gabion lined Chute**
Total Freeboard	**0.5m**
Spillway control section width	**2.0m**
Outlet works	

(1) **1 x 315mm dia HDPE PN10**

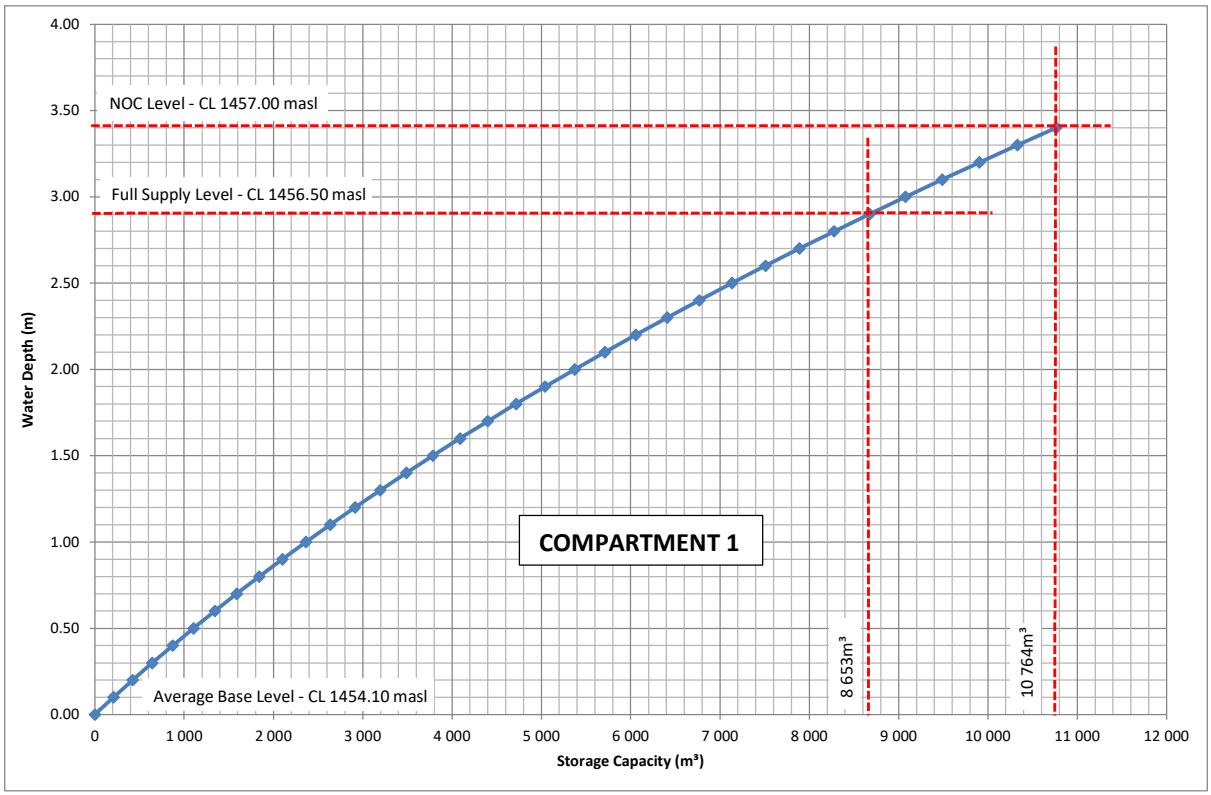
(2) **suction pipe over embankment mounted on floatation structure**

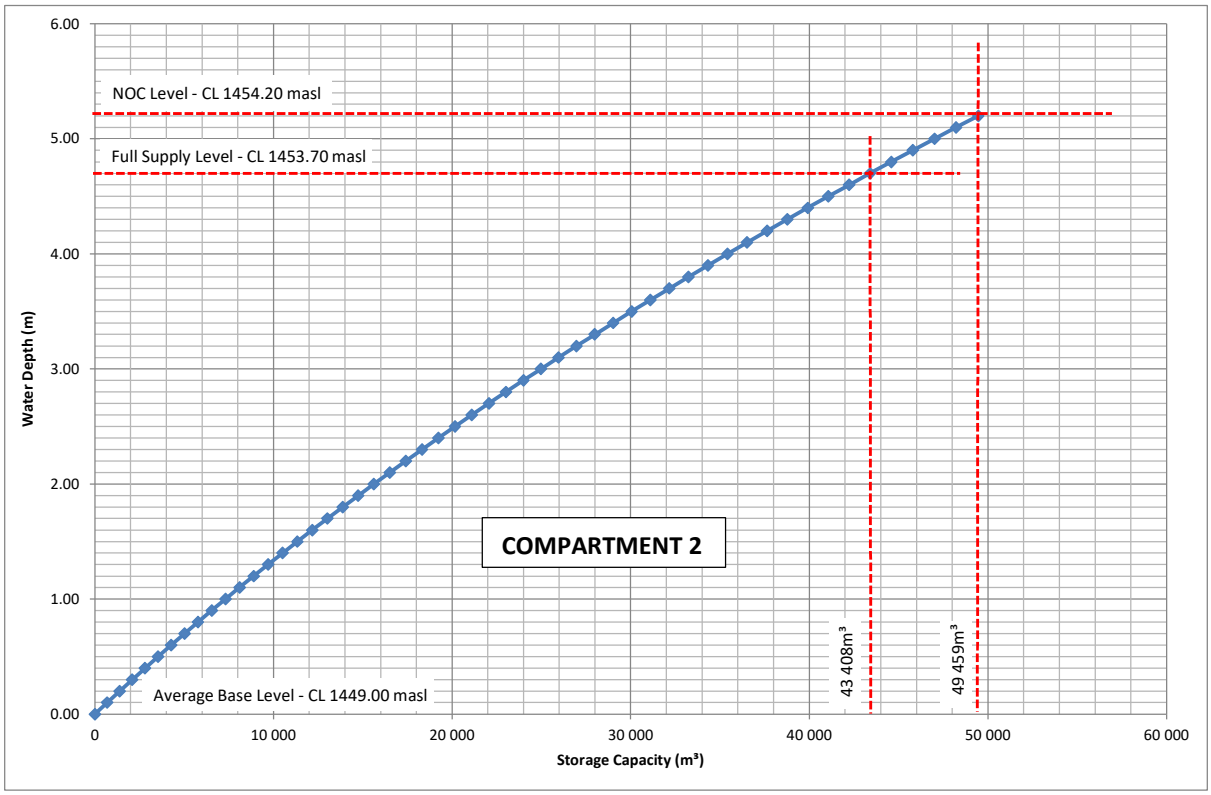
Combined features

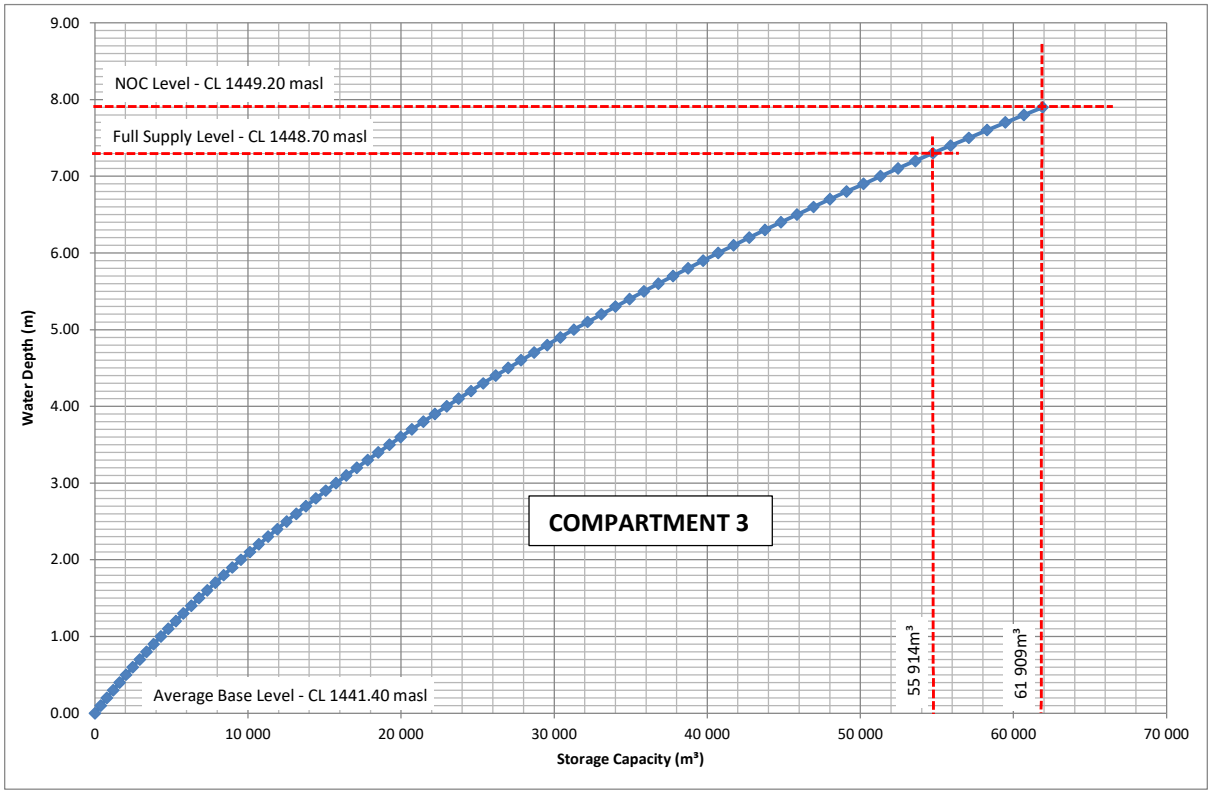
Total gross storage capacity	**107 976m³**
Total water surface area at FSL	**27 618m²**
Combined outer crest perimeter length only	**768m**

See **Appendix C** for concept design drawings.

1.4 Stage/capacity curves







Figures 1-3 : Stage/Capacity Curves

1.5 SCOPE OF WORKS

The scope of work for the construction of the Uitvlugt Balancing Dam will consist briefly of the following.

The proposed works to be carried out can be summarized as follows:

a) Clear and grub area of dam footprint.
b) Excavate new dam basins and stockpile material for reuse.
c) Construction, forming and levelling of new embankment sections.
d) Inside slope forming of excavated basins below NGL.
e) Install outlet pipe and valve at Compartment 3.
f) Surface preparation for liner installation on all upstream slopes (inside).
g) Installation of HDPE lining system (Environliner 1.5mm geomembrane).
h) Construction of emergency spillway structures of which two are interlinking structures.
i) Establishment of grass on downstream slopes and crest sections.

1.6 TERMS OF REFERENCE

Mr. M.F. Joubert (Pr Tech Eng), an approved professional person (APP) registered with DWS, of the firm PG Consulting (Pty) Ltd, was appointed by Koningskraal Boerdery (Mr. Frik Roets), to assist them with the design for the proposed new off-channel water storage dam on their property. Mr. Joubert will also be responsible for part-time construction supervision and quality control.

A contractor shall be appointed by the owner(s), following a tender process, once the required construction licenses have been issued.

A site investigation and basic geotechnical assessment were conducted by PG Consulting Engineers on 15 January 2026. Refer to **Appendix D** for material test results.

2 WATER / ENVIRONMENTAL ACT REQUIREMENTS

There are water and environmental regulatory requirements which every dam needs to adhere to. The specific legal requirements are mandatory and are presented in **Figure 2-1** below. A Water Use Licence (WULA), Environmental Assessment (Environmental Impact Assessment/ Basic Assessment) and Dam Safety Classification, along with the Licence to Construct are required.

The construction of a dam can only commence once these inputs have been submitted and approved by the necessary regulatory bodies. The processes to be undertaken and entities that are responsible for the applications and the approvals are discussed hereafter.

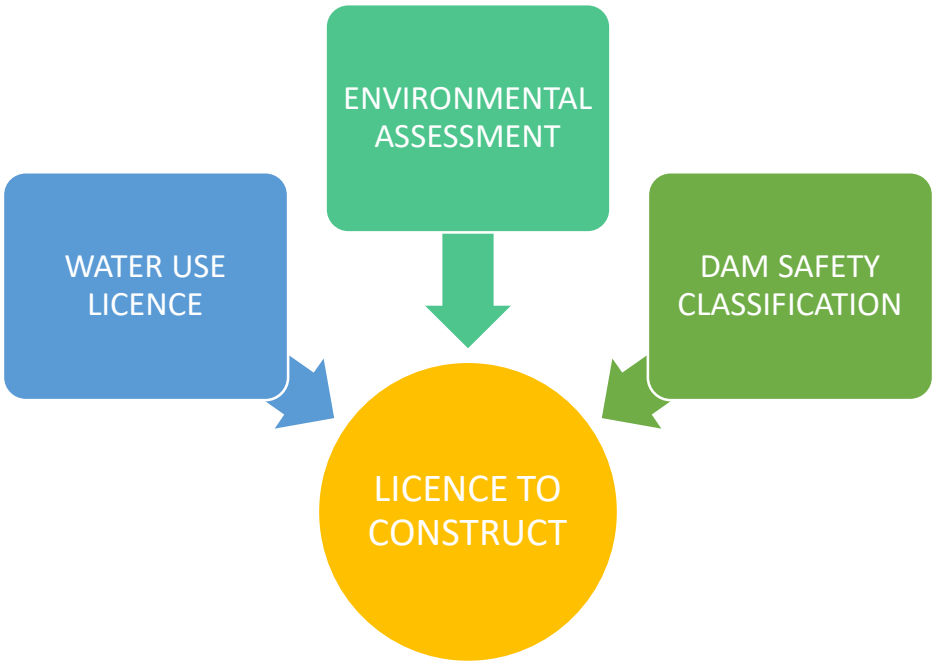


Figure 2-1: Requirements in the construction of a proposed dam

2.1 Water Use Authorisations

As the proposed Uitvlugt Balancing Dam will be built under the new National Water Act (Act 36 of 1998), the water to be stored in these dams should be formally licensed by the Department of Water and Sanitation. It however remains the owner's responsibility to obtain the necessary license(s) for this water use(s) in terms of section 21 of the National Water Act, by applying at the Department of Water and Sanitation (Gauteng regional office - Pretoria). In view of the above, the Client had appointed Ms.

Ilke Nel (Zantow Environmental Consulting Services) to assist with the WULA applications and to obtain all the necessary water use licenses.

2.2 Dam Safety Regulations

In terms of the Dam Safety Regulations, Chapter 12, Section 120 of the new National Water Act (Act 36 of 1998), a dam with a maximum wall height of more than 5 (five) meters and a capacity which exceeds 50 000 cubic meters, is defined as a dam with a safety hazard. Such a dam must be formally classified and registered for Dam Safety purposes with the Department of Water and Sanitation (Dam Safety Office - Pretoria).

Considering the above, as well as the characteristics mentioned in Section 2.3, it is expected that the new dam can be regarded as a **Category "0-dam"** (i.e., a dam without a safety risk) due to the maximum wall height of less than 5m. The proposed dam is therefore not subjected to the Dam Safety legislation.

2.3 Environmental Impact Assessment (EIA)

Prior to any construction works, authorization should be received from the relevant Environmental Authority. This is to comply with the legislation promulgated in terms of Section 24G, read with Section 7 (Transitional provision) of the National Environmental Management Act (NEMA), 1989 (Act 8 of 2004) regarding the control over activities, which may have a detrimental effect on the environment.

In view of the above, the Client had appointed Ms. Karien Zantow (Zantow Environmental Consulting Services) to conduct a formal EIA and to obtain all the necessary environmental authorizations.

2.4 Safety of existing development downstream

A search of recent topographical maps as well as satellite imagery (as supplied by Google Earth) indicates that there are no infrastructure or development within the prescribed downstream flood zone which will be affected by a dambreak flood. The dam closest section will be constructed (off-channel) some 320m from the left bank of

the Suikerbosrant River and will have maximum wall heights of lower than 5m at the three proposed compartments. Hence, it is recommended that the dam be regarded as a dam without any safety risk.

3 GEOTECHNICAL AND FOUNDATION CONDITIONS

With reference to GIS geology maps, most of the area in the vicinity appears to be underlain by a network of fine- to coarse-grained sandstone, shale and coal seams. The main geology is described as the Vryheid Formation of the Ecca Group of the Karoo Supergroup and is indicated as “Pv” on the map insert below. The map image below shows the geology orientation at the dam site (indicated with blue pin).

No base / bedrock was found within a depth to 4 meters. This will be reassessed during construction, when the basins are excavated.

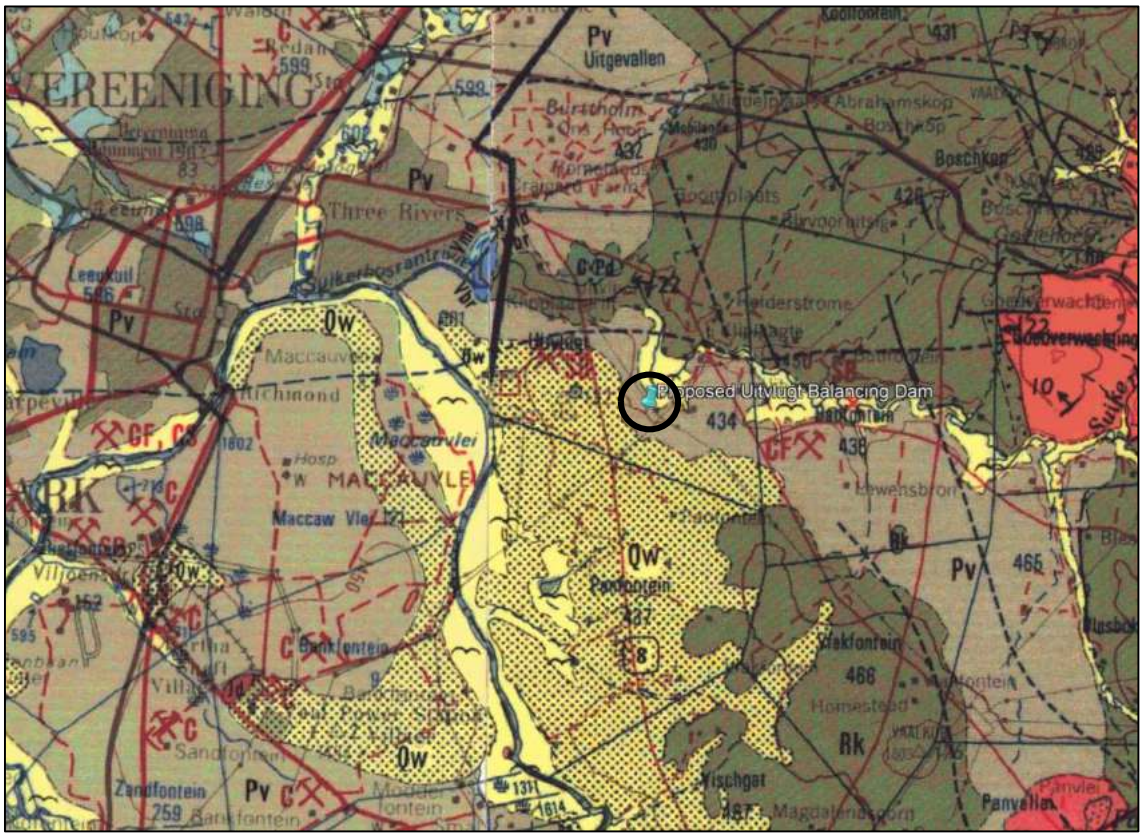


Figure 3-1 : Insert of RSA Geology map and dam location in black circle

A basic shallow soil geotechnical investigation was conducted where ten (10) trail pits were excavated. Refer to **Figure 3-5** below for locations at the site area. Selective samples from the trial pits were taken and sent to reputable laboratories for grading, foundation indicator, and MMD and OMC testing. See material test results attached under **Appendix C**. **Figures 3-2, 3-3 and 3-4** show the trail pits excavated in 2025.

Figure 3-1 : Excavated Trial Pit (Test pit 1)

Figure 3-2 : Excavated Trial Pit (Test pit 5)

Figure 3-4 : Excavated Trial Pit (Test pit 6)

Figure 3-5 : Location of Excavated Trial Pits

The overall profile was found to consists of a layer topsoil (with organic matter), on top of a pebble layer followed by weathered to stiff sandstone. No signs of shale were present.

4 EMBANKMENT AND MATERIAL PARAMETERS

4.1 Materials

The proposed Uitvlugt Balancing Dam will be a homogenous earthfill structure. Additional material testing was done during the site inspection at TP6 and basic shallow soil geotechnical investigation. Material was sampled for testing by Letaba Lab of which the results are included as **Appendix D**. A summary is also presented in **Table 4-1** below. The sample had tested favourably for embankment construction.

Table 4-1 : Material Test Results

	Recommend core zone values	Sample Tested	Comments
Sample No.		**G4587/01**	
Field No.		**TP1**	
Depth (m)		2.0m	
Material description		Dark red orange clayey sand	
Clay content (%<0,005)	10 - 30	45.2	Acceptable if mixed with upper horizon sandy material
Liquid limit (%)	30 - 60	32	Acceptable
Plasticity index (%)	4 - 24	15	Acceptable
Linear shrinkage (%)	0 - 10	7.3	Acceptable
Grading modulus		0.8	
Screen analysis % (0,425mm)	40+	84	Acceptable
Maximum dry density (kg/m³) (MDD)	1590 - 1830	2232	Higher density due to presence op pebble zone

Optimum Moisture Content % (W)	14 - 22	5.4	Acceptable if optimum water is applied during construction

The laboratory test indicates in general that favorable materials are present within the dam basin, although the tested clay content appears to be on the high side for embankment construction, it can be mixed with sandy material from the upper horizon and fines of the pebble layer to achieve an approved matrix for construction.

Although water was present within some of the excavated trail pits, no signs of an active water table were observed. The water in the pits is assumably from recent heavy rainfall experienced in the vicinity. Subsequently, the need of installing a subsoil drain system is omitted in the design.

Additional material testing will be done during construction to ensure that all materials used in the embankment are properly selected.

4.2 Embankments

Before construction of the embankment commences, all surfaces of the dam solum (dam footprint) shall be cleared, grubbed, and wetted in order to achieve proper compaction conditions at the merging zone. The total footprint area of the dam equates to approximately **32 000m²**.

The expected volume of earthfill required for the forming of the new embankments is estimated at **44 084m³** (excluding key trench). By applying a 15% compaction factor, the required earthfill is calculated at approximately **50 700m³**.

The embankments will consist of a total crest length of **1 008m** (dividing embankment lengths are **240m**), with a minimum crest width of **4.0m**. The upstream and downstream slopes will be constructed to a gradient of **1(V):2.5(H)**. See concept design drawings attached under **Appendix C**.

A cut to spoil volume of approximately **10 000m³** is estimated.

4.3 Key trench

A key trench will be constructed at the proposed dam wall centre line, in order to provide proper founding conditions for the new embankment section above NGL. The assumed excavation depth is approximately 0.5m with a width of 3m. Actual depth and extent of the key trench to be established on site during construction.

Backfilling of the excavated trench section should be done with earthfill material having properties which meet the recommended criteria in **Table 4-1**. The expected volume of the key trench section is approximately **1 764m³**.

4.4 Engineered Liner

The proposed Uitvlugt Balancing Dam will be fitted with a 1.5mm HDPE Liner (Environliner, conforming to GRI/GM13 or similar approved by Engineer). Recommended liner properties are presented in the **Table 4-3** below.

The liner should be installed by competent and approved contractors to specification and should be anchored to the crest section by means of a 500mm x 500mm anchor trench. The liner system should furthermore be installed on a prepared surface as specified by the HDPE liner supplier (See **Appendix E** for Gundle specifications).

Total area to be covered (including allowance for anchor trenches but excluding overlapping) is estimated at approximately **32 290m²** (Compartment 1 = 4 970m², Compartment 2 = 13 700m², Compartment 3 = 13 620m²).

Refer to concept design drawings attached under **Appendix C**.

Table 4-3 : HDPE Liner Properties Sheet

Tested Property	Unit	Test Method	Values (*)			
Thickness [a]	mm	ASTM D 5199	1.5	2.0	2.5	3.0
Density	g/cm³	ASTM D 792	≥ 0.94	≥ 0.94	≥ 0.94	≥ 0.94
Tensile Properties [b] (min. ave.)		ASTM D 638 / D 6693; Type IV				
Strength at Yield	N/mm	50 mm/min	22	30	37	44
Elongation at Yield	%	lo = 33 mm	13	13	13	13
Strength at Break	N/mm	200 mm/min	40	53	67	80
Elongation at Break	%	lo = 50 mm	700	700	700	700
Tear Resistance (min. ave.)	N	ASTM D 1004	190	250	315	375
Puncture Resistance (min. ave.)	N	ASTM D 4833	480	640	800	960
Carbon Black Content	%	ASTM D 1603	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0
Carbon Black Dispersion [c]	Category	ASTM D 5596	1/2	1/2	1/2	1/2
Dimensional Stability (each Direction)	%	ASTM D 1204 (120°C/1 h)	± 2	± 2	± 2	± 2
Melt Flow Index [d]	g/10 min	ASTM D 1238 (190°C / 5.0 kg) (190°C / 2.16 kg)	≤ 3.0 ≤ 1.0	≤ 3.0 ≤ 1.0	≤ 3.0 ≤ 1.0	≤ 3.0 ≤ 1.0
Stress Crack Resistance (NCTL) [e]	h	ASTM D 5397; Appendix	≥ 500	≥ 500	≥ 500	≥ 500
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O_2; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100
Reference Property						
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
Oven Aging at 85°C Standard OIT (min. ave.) - % retained after 90 days	%	ASTM D 5721 ASTM D 3895	≥ 55	≥ 55	≥ 55	≥ 55
UV Resistance [f] HP-OIT retained after 1,600 hours [g]	%	ASTM D 7238 ASTM D 5885	≥ 50	≥ 50	≥ 50	≥ 50
Roll Width (approx.) [h]	m	---	6.95 / 7.0 / 7.5 / 8.0		7.0 / 7.5	
Surface	---	---	double-sided smooth			

NOTES:
(*): All values - unless otherwise noted - are nominal values.
(a): Minimum Average Thickness: Nominal - 5%; lowest individual ± 10% related to the actual average thickness.
(b): Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
(c): Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be category 1 or 2. No more than 1 view from category 3.
(d): Standard test conditions: 190°C / 5.0 kg.
(e): The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.
(f): Test-Conditions: 20 hours UV cycle at 75°C followed by 4 hours condensation at 60°C; total: 1,600 hours.
(g): UV Resistance is based on percent retained value regardless of the original High Pressure - OIT value.
(h): Roll widths and lengths have a tolerance of ± 1%.

4.5 Compaction

The new embankment sections must be compacted to an overall average minimum of at least 95% standard Proctor density at 2% wet of optimum moisture content (OMC). The thickness of the layers which are to be compacted should not exceed 200mm on placing. It is further suggested that a pad-foot roller be used during construction.

4.6 Slope stability / analysis

A slope stability analysis was not deemed necessary at this stage, due to the relatively low proposed wall height of less than 5m and because the dam is going to be lined. For practical reasons and to gain storage volume, the upstream (inner) slopes is specified to be 1(H):2.5(V).

4.7 Slope Protection

It is highly recommended that after the proposed construction works, the entire embankment shall be protected with a suitable indigenous grass cover, on the crest and downstream slopes (hydroseeding or similar can be applied).

5 EMERGENCY SPILLWAY

It is required that the dam shall be equipped with an emergency spillway on the embankment crest section in order to provide for human and mechanical error (i.e., pumps not controlled and switched off in time or closing mechanisms malfunctioning). In this case an emergency spillway at each compartment will be incorporated. Refer to concept drawings for proposed positions, **Appendix C**.

It is recommended that the spillways be constructed as HDPE lined structures supported by gabion side walls. The emergency spillways between Compartments 1 and 2, and Compartments 2 and 3 will be constructed as interlinking structures. Refer to **Figure 5-1** below for typical example of an HDPE lined interlinking spillway.

It is recommended that the dimensions of the spillways will consist of at least a 3m base width on the embankment crest with an available minimum freeboard of 0.5m which will provide for a discharge capacity of **1.54m³/s**.

MEASUREMENTS:

z1 - side slope to 1	0.00	Section area (m²)	1.5
z2 - side slope to 1	0.00	Velocity (m/s)	**1.03**
H - total freeboard available (m)	**0.50**		
W - width of spillway control point (m)	3.0		

Q - CALCULATIONS:

equation: Q1 = a.L.H^1.5 + 1.35z.H^2.5 *where a = 1.45*

with: **Q1** (in cub.m./sec.) = **1.54**

equation: Q2 = C.Le.H^1.5 *where Le = L + 0.9zH* *and C = 1.45*

with: **Q2** (in cub.m./sec.) = **1.54**

Figures 5-1 : Typical Emergency Spillway

6 OUTLET WORKS (PIPES)

For the release of water for emergency situations or for drawdown during maintenance operations it is required that a bottom outlet pipe be installed. For this it is recommended that a 315mm dia HDPE pipe be installed through the embankment at Compartment 3.

In addition, it is recommended that the dam be equipped with a flexible suction pipe system at Compartment 3, which will be mounted on a floating structure within the dam basin, for water abstraction purposes. Refer to **Figure 6-1** below for typical example.

The extent and costs of the suction pipes and floating structure works are not included in this report. Costs for the outlet pipe are however provided for in the attached schedule of quantities, **Appendix B**.

Figures 6-1 : Typical Suction Pipes with Floating Structures

The outlet pipe will be equipped with a grid inlet on the upstream side (water side) of the dam. The outlet pipes will be sealed with an HDPE pipe boot through the HDPE liner. See **Figure 6-2** below.

The expected length of 315mm diameter pipe required from basin to downstream daylight point was calculated as **36m.**

Figure 6-2: Typical HDPE Pipe Boot

7 WATER QUALITY

As the dam will be filled by means of a pump line via the Suikerbosrant River, no water quality investigations were undertaken. It remains the responsibility of the owner to ensure adequate water quality for crop irrigation.

8 QUALITY CONTROL

Quality control measures during the construction period will include the analysis of additional soil samples and compaction control tests, as well as concrete cube testing at the inlet works and spillway, where applicable.

The dam engineer will visit the site monthly to evaluate the following:

- Key trench foundations
- Spillway positions
- Compaction and materials quality control

The following standardised specifications are applicable to small dam construction:

- SANS 1200 AD General (small dams)

- SANS 1200 C Site Clearance
- SANS 1200 DE Small Earth Dams
- SANS 1200 G Concrete (structural)
- SANS 1200 GA Concrete (small works)
- SANS 10409 Geomembrane Liners

9 SCHEDULE OF QUANTITIES / PRELIMINARY COST ESTIMATE

Based on a Preliminary Schedule of Quantities and market related rates, the estimated cost for the construction of the proposed Uitvlugt Balancing Dam is summarized as follows:

SCHEDULE OF QUANTITIES: SUMMARY			
CONSTRUCTION OF PROPOSED UITVLUGT BALANCING DAM			
SECTION A:	GENERAL SMALL DAMS (AD) (10%)	R	633 406.50
SECTION B:	SITE CLEARANCE (C)	R	112 000.00
SECTION C:	EARTHWORKS (DE)	R	3 705 065.00
SECTION D:	CONCRETE (SMALL WORKS) (GA)	R	77 200.00
SECTION E:	MEDIUM PRESSURE PIPE LINES (L)	R	68 500.00
SECTION F:	MISCELLANEOUS & LINING	R	2 371 300.00
SUB-TOTAL FOR PRICED ITEMS		R	6 967 471.50
10% CONTINGENCIES		R	696 747.15
SUB TOTAL		R	7 664 218.65
15% VAT		R	1 149 632.80
CARRIED FORWARD		R	8 813 851.45

Based on preliminary calculated quantities, market related rates and recent similar quotations received from Gundle API, the estimated cost for the construction of the proposed Uitvlugt Balancing Dam is **R8 813 851-45** including VAT and 10% contingencies. This however is only for decision making purposes.

See **Appendix B** for a preliminary priced schedule of quantities by the Engineer. A copy of this, without rates, will be included in the Tender Document to be priced by potential Contractors.

10 CONCLUSIONS AND RECOMMENDATIONS

- It is the intention of the owner (Koningskraal Boerdery (Pty) Ltd) to construct a new lined off-channel balancing dam for irrigation purposes and water balancing.

- A site visit with basic geotechnical assessment was conducted on 15 January 2026 by Mr. M.F. Joubert Pr Tech Eng and Mr. J. Kettledas of the firm PG Consulting Engineers.

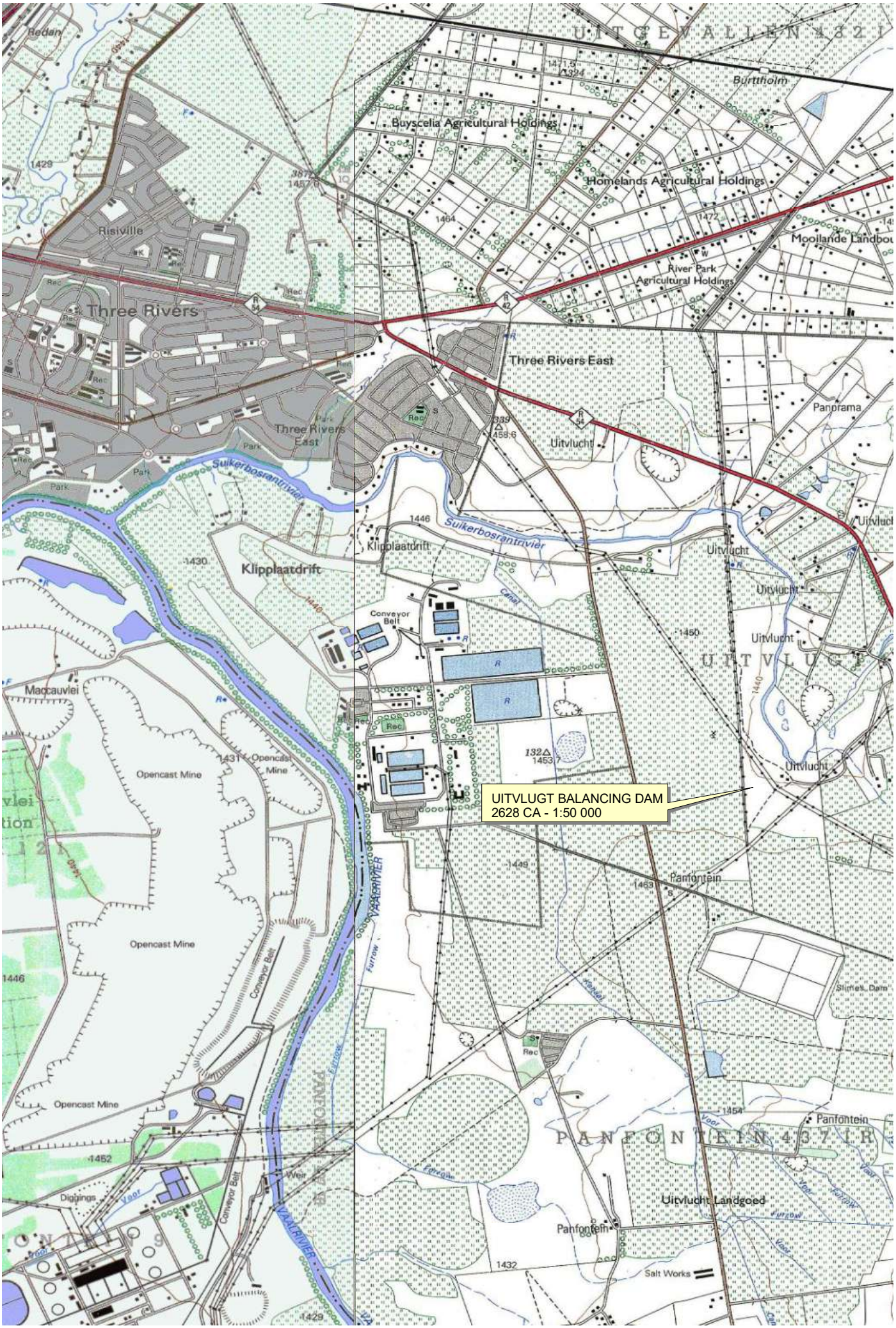
- It will be technically feasible to construct a balancing dam, with three compartments, with a combined storage capacity of approximately 108 000m³ **(i.e. 107 976m³)** and with a maximum wall height of **4.9m** (less than 5m at all three compartments) at the identified area. The dam's outer embankment perimeter is estimated to be **768m** in length.

- The proposed works for the dam construction to be carried out can be summarized as follows:
    a) Clear and grub area of dam footprint.
    b) Excavate new dam basins and stockpile material for reuse.
    c) Construction, forming and levelling of new embankment sections.
    d) Inside slope forming of excavated basin below NGL.
    e) Install outlet pipe and valve at Compartment 3.
    f) Surface preparation for liner installation on all upstream slopes (inside).
    g) Installation of HDPE lining system (1.5mm geomembrane).
    h) Construction of emergency spillway structures.
    i) Establishment of grass on downstream slopes and crest section.

- This report is also to be used as a tool to support all applicable and required license applications in terms of the Water and Environmental Acts.

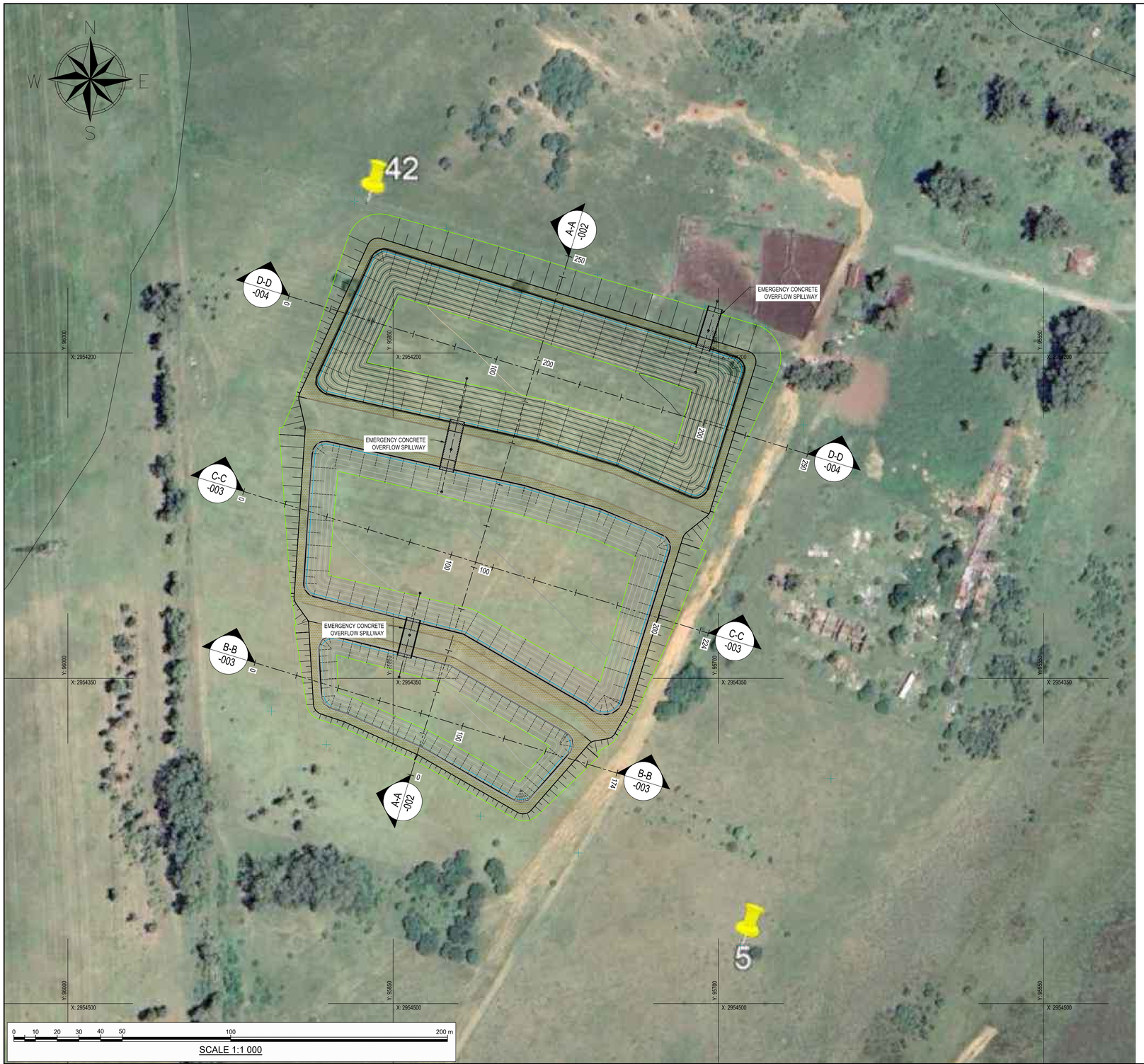
- The preliminary estimated cost to construct the dam as described in the report is approximately **R8.81 million** including VAT and 10% contingencies but excluding Engineering fees and disbursements. The cost estimate is based on recent market related rates of similar projects. This implies a cost rate of **R70-96/m³** of water stored.

APPENDIX A – TOPOGRAPHICAL MAP


Hedan
Risiville
Three Rivers
Three Rivers East
Suikerbosrantrivier
Klipplaatdrift
Maccauvlei
Opencast Mine
Conveyor Belt
Weir
Diggings
VAALRIVIER
Buyscelia Agricultural Holdings
Homelands Agricultural Holdings
River Park Agricultural Holdings
Burtholm
Mooilande Landbou
Panorama
Uitvlucht
Canal
Panfontein
Slimes Dam
Uitvlucht Landgoed
Salt Works
UITVLUGT BALANCING DAM
2628 CA - 1:50 000

APPENDIX B – SCHEDULE OF QUANTITIES / COST ESTIMATE

APPENDIX C – CONCEPT DRAWINGS



POINT TABLE			
POINT	Y	X	LEVEL
100	95882.946	2954366.563	1456.998
101	95886.773	2954361.708	1456.998
102	95888.994	2954324.948	1457.000
103	95889.910	2954322.353	1456.683
104	95894.737	2954315.563	1454.586
105	95895.651	2954312.336	1454.200
106	95890.536	2954235.082	1454.200
107	95890.652	2954233.634	1453.956
108	95893.388	2954221.692	1449.751
109	95893.059	2954218.489	1449.200
110	95861.571	2954149.906	1449.200
111	95855.558	2954147.213	1449.200
112	95686.215	2954199.240	1449.200
113	95682.908	2954205.501	1449.200
114	95703.814	2954272.863	1449.200
115	95705.447	2954275.270	1450.025
116	95714.773	2954282.805	1453.377
117	95716.404	2954285.205	1454.200
118	95740.500	2954362.461	1454.200
119	95740.925	2954363.442	1454.200
120	95747.717	2954375.404	1454.200
121	95751.208	2954377.861	1455.104
122	95756.974	2954378.864	1456.303
123	95759.882	2954380.500	1457.000
124	95786.342	2954410.774	1457.000
125	95792.606	2954411.814	1457.000
127	95839.064	2954385.035	1457.000
128	95838.611	2954385.267	1457.000
129	95872.332	2954370.116	1457.000
130	95872.800	2954369.934	1457.000

COMBINED		
Minimum Fill Height	-	450 mm
Maximum Cut dept	-	6.00 m
Max Dam height external	-	4.90 m
Inner slope	-	1:2.5 m
External Slope	-	1:2.5 m
Free-board	-	500 mm
Total Capacity	-	107 976.36 m³
Total Water Surface Area	-	27 618.18 m²
Total Volume Cut	-	60 055.62 m³
Total Volume Fill Embankment	-	44 084.15 m³
Total Cut to Spoil	-	15 971.48 m³

STAGE STORAGE TABLE - DAM 1

ELEV	AREA (sq. m)	DEPTH (m)	AVG END INC. VOL. (cu. m)	AVG END TOTAL VOL. (cu. m)	CONIC INC. VOL. (cu. m)	CONIC TOTAL VOL. (cu. m)
1,453.500	425.542	N/A	N/A	0.000	N/A	0.000
1,454.000	2,302.286	0.500	681.957	681.957	619.606	619.606
1,454.500	2,618.651	0.500	1230.234	1912.191	1229.386	1848.992
1,455.000	2,946.922	0.500	1391.393	3303.585	1390.586	3239.578
1,455.500	3,286.898	0.500	1558.455	4862.040	1557.682	4797.260
1,456.000	3,639.725	0.500	1731.656	6593.696	1730.906	6528.166
1,456.500	4,543.129	0.500	2045.713	8639.409	2041.545	8569.711
1,457.000	4,540.094	0.500	2136.069	10775.478	2134.667	10704.378

STAGE STORAGE TABLE - DAM 2

ELEV	AREA (sq. m)	DEPTH (m)	AVG END INC. VOL. (cu. m)	AVG END TOTAL VOL. (cu. m)	CONIC INC. VOL. (cu. m)	CONIC TOTAL VOL. (cu. m)
1,449.000	2,628.480	N/A	N/A	0.000	N/A	0.000
1,449.500	7,180.859	0.500	2452.335	2452.335	2358.974	2358.974
1,450.000	7,916.510	0.500	3774.342	6226.677	3772.848	6131.822
1,450.500	8,428.311	0.500	4086.205	10312.882	4085.537	10217.359
1,451.000	8,952.820	0.500	4345.283	14658.165	4344.623	14561.982
1,451.500	9,490.079	0.500	4610.725	19268.889	4610.072	19172.055
1,452.000	10,040.215	0.500	4882.573	24151.463	4881.928	24053.982
1,452.500	10,603.300	0.500	5160.879	29312.342	5160.239	29214.221
1,453.000	11,179.247	0.500	5445.637	34757.978	5445.002	34659.223
1,453.500	11,768.132	0.500	5736.845	40494.823	5736.215	40395.438
1,454.000	12,370.283	0.500	6034.604	46529.427	6033.978	46429.416

STAGE STORAGE TABLE - DAM 3

ELEV	AREA (sq. m)	DEPTH (m)	AVG END INC. VOL. (cu. m)	AVG END TOTAL VOL. (cu. m)	CONIC INC. VOL. (cu. m)	CONIC TOTAL VOL. (cu. m)
1,441.000	187.022	N/A	N/A	0.000	N/A	0.000
1,441.500	2,788.658	0.500	743.920	743.920	616.309	616.309
1,442.000	4,455.670	0.500	1811.082	2555.002	1794.881	2411.191
1,442.500	4,915.033	0.500	2342.676	4897.678	2341.737	4752.928
1,443.000	5,387.084	0.500	2575.529	7473.207	2574.628	7327.555
1,443.500	5,872.190	0.500	2814.819	10288.026	2813.947	10141.503
1,444.000	6,370.368	0.500	3060.640	13348.665	3059.795	13201.297
1,444.500	6,881.642	0.500	3313.003	16661.668	3312.180	16513.478
1,445.000	7,406.140	0.500	3571.945	20233.613	3571.143	20084.621
1,445.500	7,943.835	0.500	3837.494	24071.107	3836.709	23921.329
1,446.000	8,494.724	0.500	4109.640	28180.747	4108.870	28030.199
1,446.500	9,058.816	0.500	4388.385	32569.132	4387.630	32417.829
1,447.000	9,636.097	0.500	4673.728	37242.860	4672.985	37090.814
1,447.500	10,226.593	0.500	4965.673	42208.533	4964.941	42055.756
1,448.000	10,830.335	0.500	5264.232	47472.765	5263.511	47319.266
1,448.500	11,446.613	0.500	5569.237	53042.002	5568.527	52887.793
1,448.900	12,076.637	0.500	5880.813	58922.815	5880.109	58767.902

DAM-3		
Minimum Fill Height	-	500mm
Maximum Cut dept	-	6.00m
Max Dam height external	-	4.9m
Inner slope	-	1:2.5m
External Slope	-	1:2.5m
Free-board	-	500mm
Dam Capacity	-	55 914.35m³
Water Surface Area	-	11 640.88m²
Liner - excluding overlaps	-	13 619.26m²

DAM-1		
Minimum Fill Height	-	1.050m
Maximum Cut dept	-	1.650m
Max Dam height external	-	2.80m
Inner slope	-	1:2.5m
External Slope	-	1:2.5m
Free-board	-	500mm
Dam Capacity	-	8 653.46m³
Water Surface Area	-	3 991.18m²
Liner - excluding overlaps	-	4 962.17m²

DAM-2		
Minimum Fill Height	-	450mm
Maximum Cut dept	-	3.590m
Max Dam height external	-	4.9m
Inner slope	-	1:2.5m
External Slope	-	1:2.5m
Free-board	-	500mm
Dam Capacity	-	43 408.55m³
Water Surface Area	-	11 986.12m²
Liner - excluding overlaps	-	13 695.28m²

FOR DISCUSSION | ORIGINAL SIZE A1

AMENDMENTS				
NR.	DATE	APPROVED	DESCRIPTION	PAR.

NOTES:

GENERAL:
1. ALL WORK MUST COMPLY WITH THE BY-LAWS AND "SPECIFICATIONS" OF THE LOCAL AUTHORITY, NATIONAL" BUILDING REGULATIONS AND SANS 1200.
2. ALL DIMENSIONS AND LEVELS MUST BE CHECKED ON SITE AND ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IN WRITING BEFORE WORK COMMENCES.
3. THE ENGINEER WILL ASSIST THE CONTRACTOR IN "STAKING LINES, WHERE AFTER THE CONTRACTOR" SHALL TAKE OVER ALL SETTING OUT PEGS AND SURVEY BEACONS AND MAINTAIN THEM DURING THE CONSTRUCTION PERIOD.

CLIENT:

KONINGSKRAAL BOERDERY

PO Box 263957,
Three Rivers,
Vereeniging, Gauteng,
1935

Cell : ??
Email : frikroets@vodamail.co.za

Client/Employer

CONSULTANT:

PG CONSULTING ENGINEERS
PASSIONATE ABOUT DAMS

DESIGNED: GJ PARSONS & MF JOUBERT	DRAWING CHECKED: MF JOUBERT
CHECKED: MF JOUBERT	DRAWN: GJ PARSONS
APPROVED: MF JOUBERT	OTHER CONSULTANTS
Pr. No.: 201670207	

UITVLUGT STORAGE DAMS

PROJECT

GENERAL LAYOUT
PLAN - OPTION-2

PLAN DESCRIPTION

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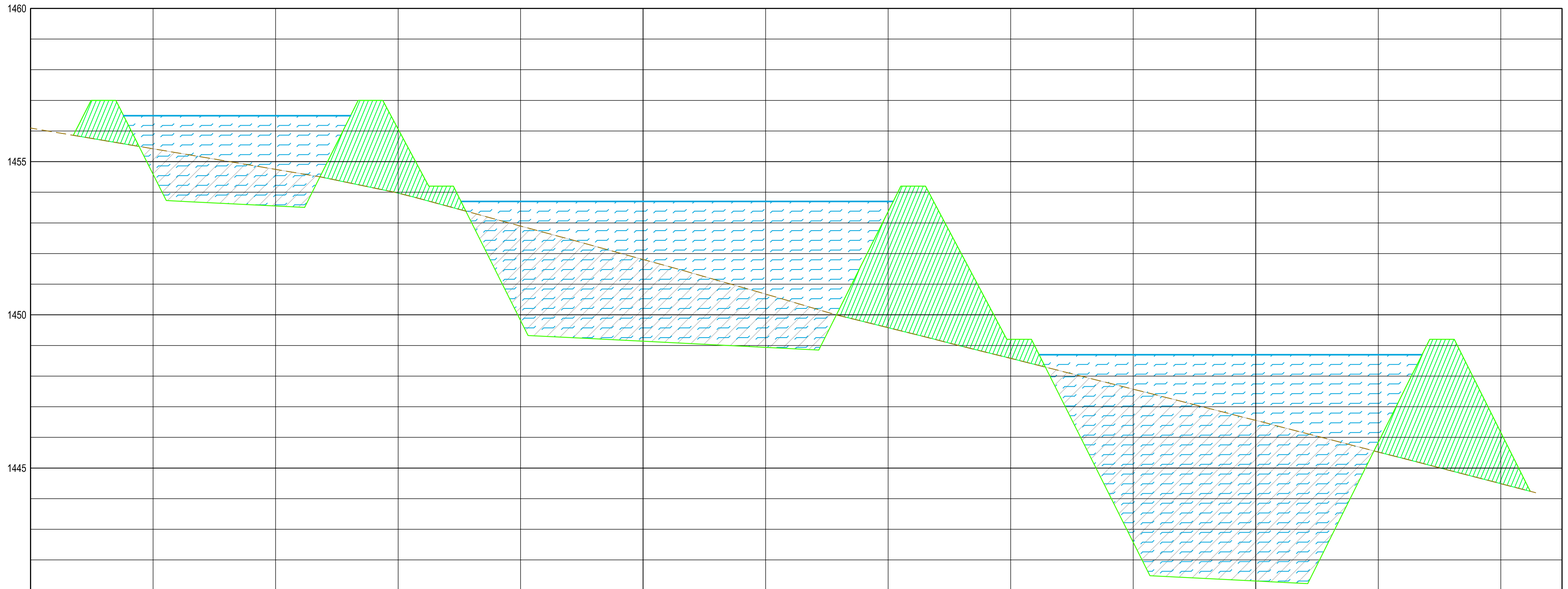
DATE: 2026-2-16	SCALE: 1:1 000
DRAWING NUMBER: P26-336/L/001	
REVISION NO: A	
PROJECT NUMBER: t.b.c	



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 1440.000

CENTRE LINE (CL)	1455.420	1454.748	1453.971	1452.898	1451.806	1450.677	1449.582	1448.580	1447.574	1446.555	1445.523	1444.491	1444.194	
GROUND LEVELS ON CL	1455.420	1454.748	1453.971	1452.898	1451.806	1450.677	1449.582	1448.580	1447.574	1446.555	1445.523	1444.491	1444.194	
DISTANCE (m)	20	40	60	80	100	120	140	160	180	200	220	240	246	250

SECTION A- A
FROM 0.000 TO 250.000

FOR DISCUSSION | ORIGINAL SIZE A1

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

NOTES:

GENERAL:
1. ALL WORK MUST COMPLY WITH THE BY-LAWS AND "SPECIFICATIONS" OF THE LOCAL AUTHORITY, NATIONAL" BUILDING REGULATIONS AND SANS 1200.
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CONSULTANT:

PG CONSULTING ENGINEERS
PASSIONATE ABOUT DAMS

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CHECKED: MF JOUBERT	DRAWN: GJ PARSONS
APPROVED: MF JOUBERT	OTHER CONSULTANTS
Pr. No.: 201670207	

PROJECT: UITVLUGT STORAGE DAMS

SECTION A - A

PLAN DESCRIPTION

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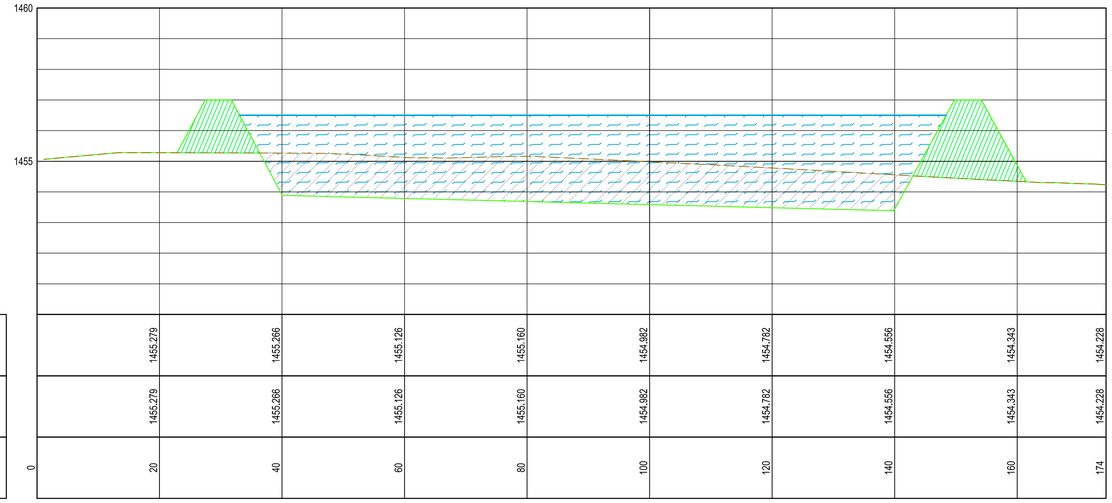
DATE: 2026-2-10	SCALE: AS SHOWN
DRAWING NUMBER: P26336/S/002	
REVISION NO: A	
PROJECT NUMBER: t.b.c	

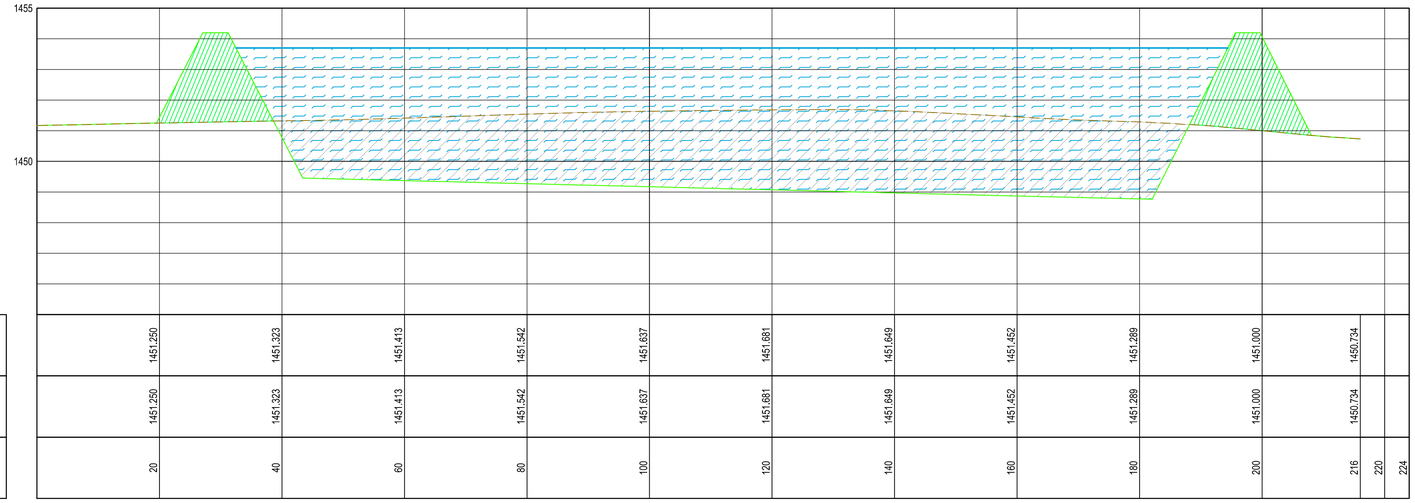


SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 1450.000

CENTRE LINE (CL)	1455.279	1455.266	1455.126	1455.160	1454.962	1454.782	1454.556	1454.343	1454.228
GROUND LEVELS ON CL	1455.279	1455.266	1455.126	1455.160	1454.962	1454.782	1454.556	1454.343	1454.228
DISTANCE (m)	0	20	40	60	80	100	120	140	160	174

SECTION B-B
FROM 0.000 TO 174.495



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 1445.000

CENTRE LINE (CL)	1451.250	1451.323	1451.413	1451.542	1451.637	1451.681	1451.649	1451.452	1451.289	1451.000	1450.734		
GROUND LEVELS ON CL	1451.250	1451.323	1451.413	1451.542	1451.637	1451.681	1451.649	1451.452	1451.289	1451.000	1450.734		
DISTANCE (m)	20	40	60	80	100	120	140	160	180	200	216	220	224

SECTION C-C
FROM 0.000 TO 223.995

FOR DISCUSSION | ORIGINAL SIZE A1

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

NOTES:

GENERAL:
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CLIENT:

KONINGSKRAAL BOERDERY

Client/Employer

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Vereeniging, Gauteng,
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CONSULTANT:

PG CONSULTING ENGINEERS
PASSIONATE ABOUT DAMS

DESIGNED: GJ PARSONS & MF JOUBERT
DRAWING CHECKED: MF JOUBERT
CHECKED: MF JOUBERT
DRAWN: GJ PARSONS
APPROVED: MF JOUBERT
OTHER CONSULTANTS
Pr. No.: 201670207

UITVLUGT STORAGE DAMS

PROJECT

SECTION A - A &
SECTION B - B

PLAN DESCRIPTION

DATE: 2026-2-10
SCALE: AS SHOWN
DRAWING NUMBER: P26336/S/002
REVISION NO: A
PROJECT NUMBER: t.b.c

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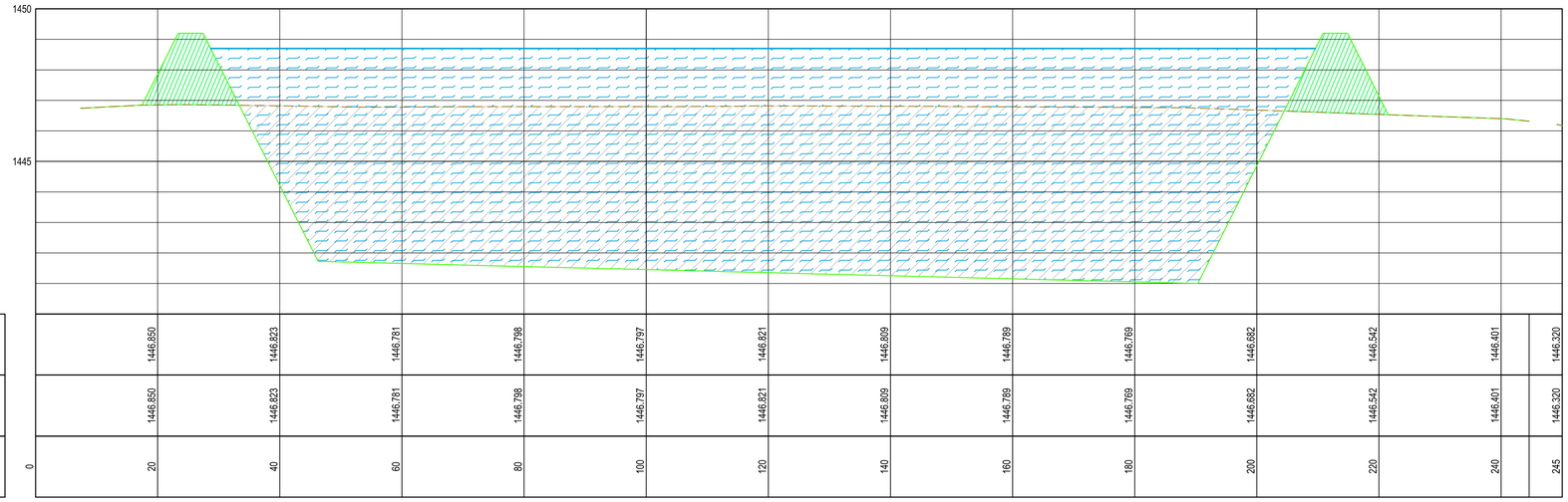
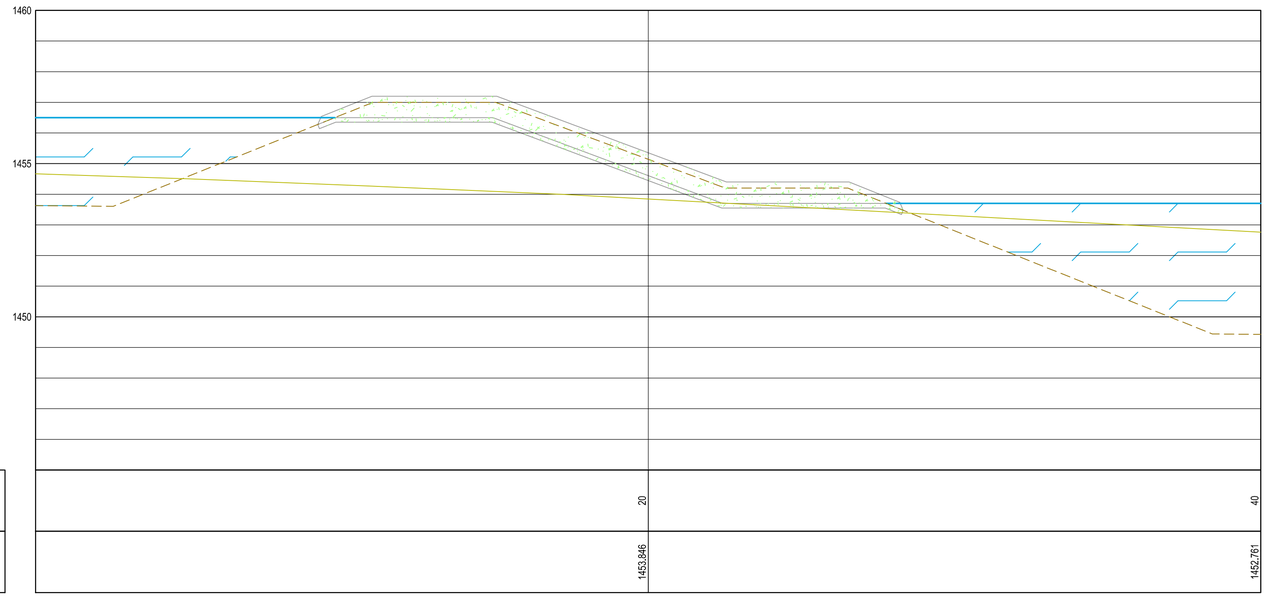


SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 1440.000

CENTRE LINE (CL)	1446.850	1446.823	1446.781	1446.798	1446.797	1446.821	1446.809	1446.789	1446.769	1446.682	1446.542	1446.401		1446.320
GROUND LEVELS ON CL	1446.850	1446.823	1446.781	1446.798	1446.797	1446.821	1446.809	1446.789	1446.769	1446.682	1446.542	1446.401		1446.320
DISTANCE (m) 0	20	40	60	80	100	120	140	160	180	200	220	240		245

SECTION - D-D
FROM 0.000 TO 250.000



SCALES:
Horizontal 1:1000
Vertical 1:1000

DATUM 1445.000

DISTANCE (m)	20	40
GROUND LEVELS ON CL	1453.846	1452.761

SPILLWAY-DAM 1
FROM 0.000 TO 40.000

FOR DISCUSSION | ORIGINAL SIZE A1

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

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CHECKED: MF JOUBERT	DRAWN: GJ PARSONS
APPROVED: MF JOUBERT	OTHER CONSULTANTS
Pr. No.: 201670207	

UITVLUGT STORAGE DAMS

PROJECT

SECTION D - D &
DAM-1 TYPICAL SPILLWAY SECTION

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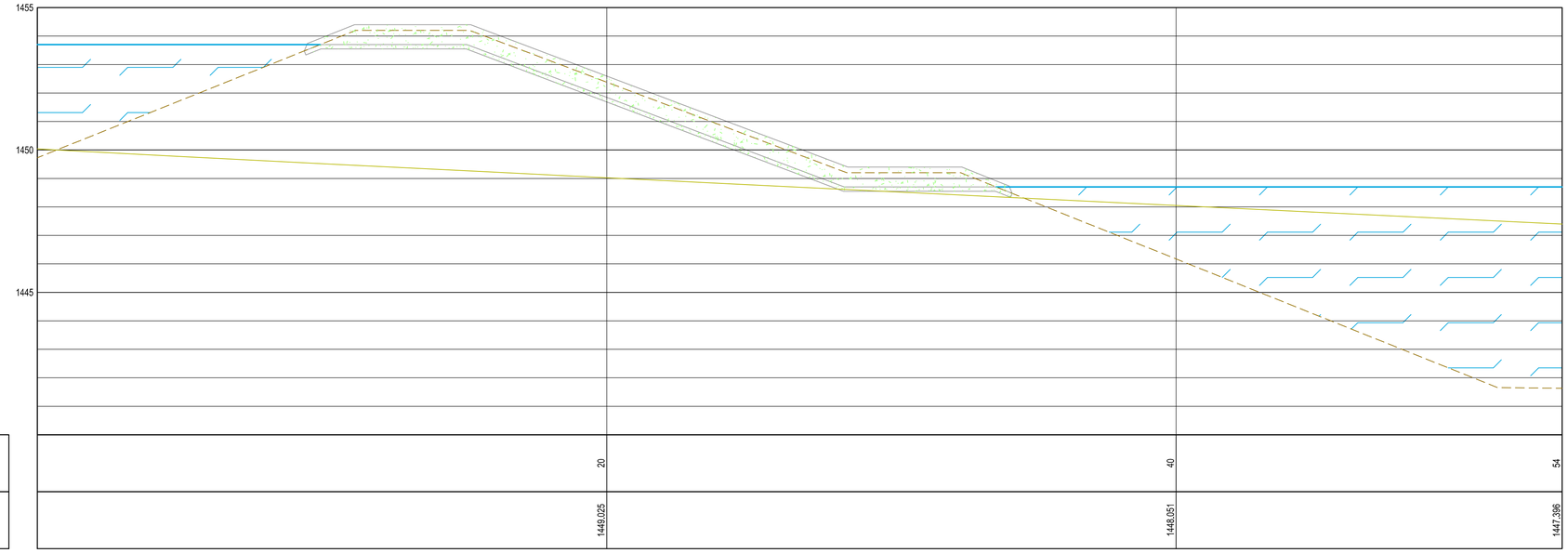
PLAN DESCRIPTION

DATE: 2026-2-10	SCALE: AS SHOWN
DRAWING NUMBER: P26336/S/003	
REVISION NO: A	
PROJECT NUMBER: t.b.c	

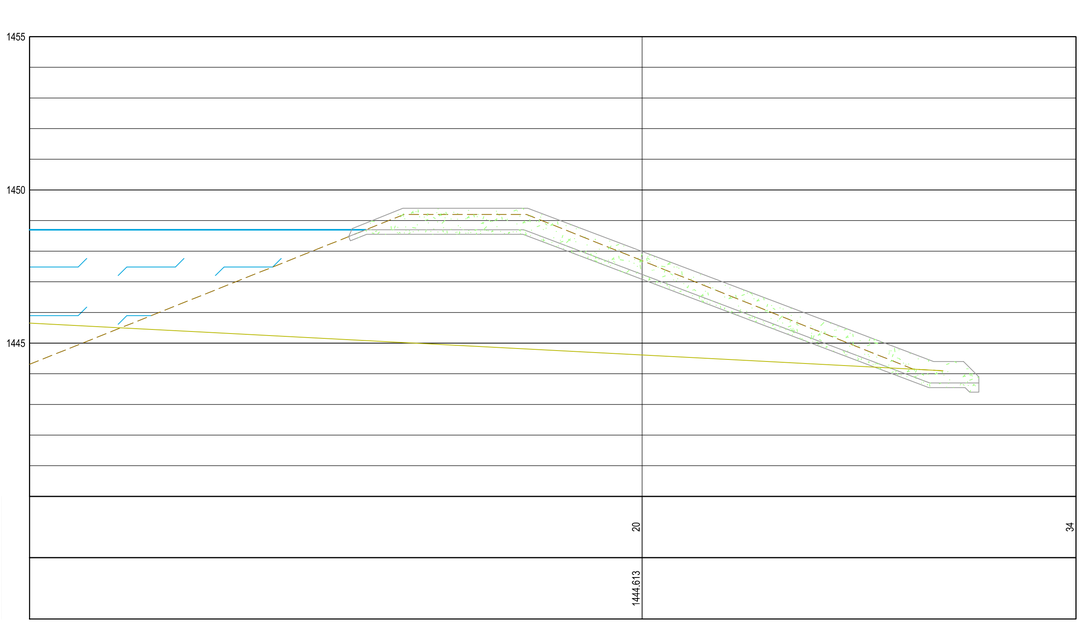


SCALES:
Horizontal 1:1000
Vertical 1:1000

DATUM 1440.000

DISTANCE (m)	20	40	54
GROUND LEVELS ON CL	1449.025	1448.051	1447.396

DAM - 2 - SPILLWAY
FROM 0.000 TO 53.558



SCALES:
Horizontal 1:1000
Vertical 1:1000

DATUM 1440.000

DISTANCE (m)	20	34
GROUND LEVELS ON CL	1444.613	

DAM - 3 - SPILLWAY
FROM 0.000 TO 34.163

FOR DISCUSSION | ORIGINAL SIZE A1

AMENDMENTS

NR.	DATE	APPROVED	DESCRIPTION	PAR.

NOTES:

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Cell : ??
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Client/Employer

CONSULTANT:

PG CONSULTING ENGINEERS
PASSIONATE ABOUT DAMS

DESIGNED	DRAWING CHECKED
GJ PARSONS & MF JOUBERT	MF JOUBERT
CHECKED	DRAWN
MF JOUBERT	GJ PARSONS
APPROVED	OTHER CONSULTANTS
MF JOUBERT	
Pr. No.: 201670207	

UITVLUGT STORAGE DAMS

PROJECT

DAM-2 & 3 TYPICAL OVERFLOW SPILLWAY SECTION

PLAN DESCRIPTION

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DATE	SCALE
2026-2-10	AS SHOWN

DRAWING NUMBER
P26336/S/004

REVISION NO:
A

PROJECT NUMBER
t.b.c

APPENDIX D – SOIL TEST RESULTS

LETABA LAB

CIVIL ENGINEERING MATERIALS LABORATORY

** ♦Mbombela (Nelspruit) ♦Polokwane ♦Bloemfontein ♦Tshwane (Pretoria) ♦eMalahleni (Witbank) ♦Mashishing (Lydenburg) ♦Thohoyandou♦ Bhisho

Tel. No: 087 285 0816 **e-mail :** letaba@letabalab.co.za www.letabalab.co.za

GRAVEL, SOIL AND SAND ANALYSIS : FOUNDATION INDICATOR TEST REPORT

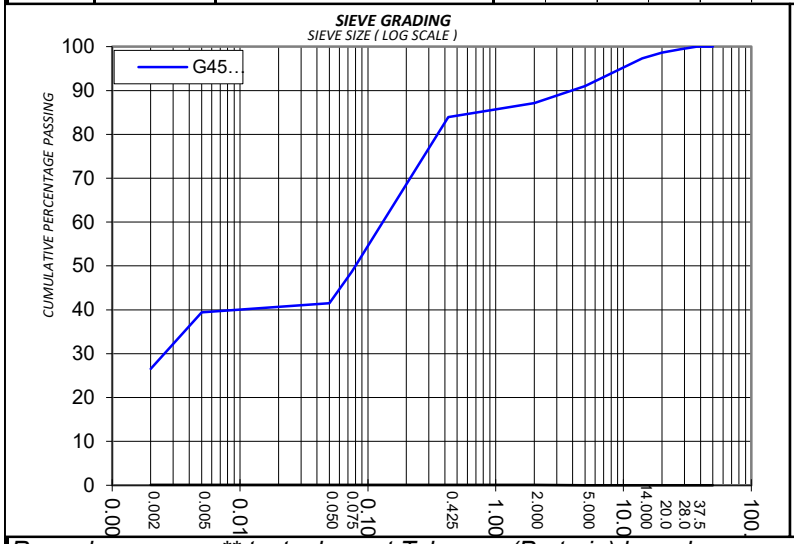
SANS 3001 Methods GR1, GR3, GR5, GR10, GR20, GR30 & GR40

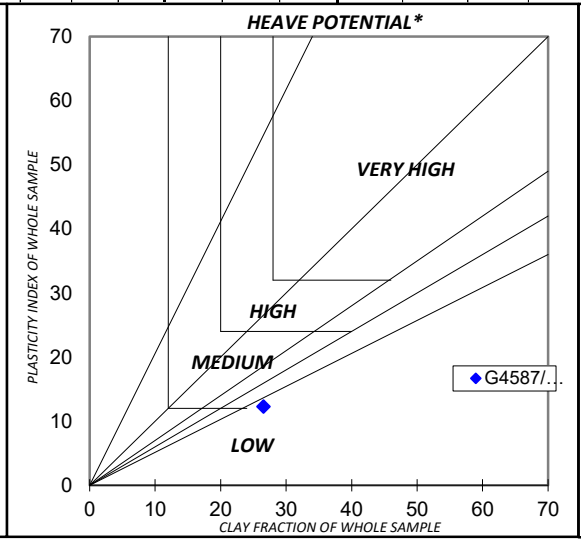
Client : **PG Consulting Engineers** Address: Sunninghill Office Park, 24 Peltier Street, Sunninghill, Johannesburg **Date Sampled: 15-Jan-26**

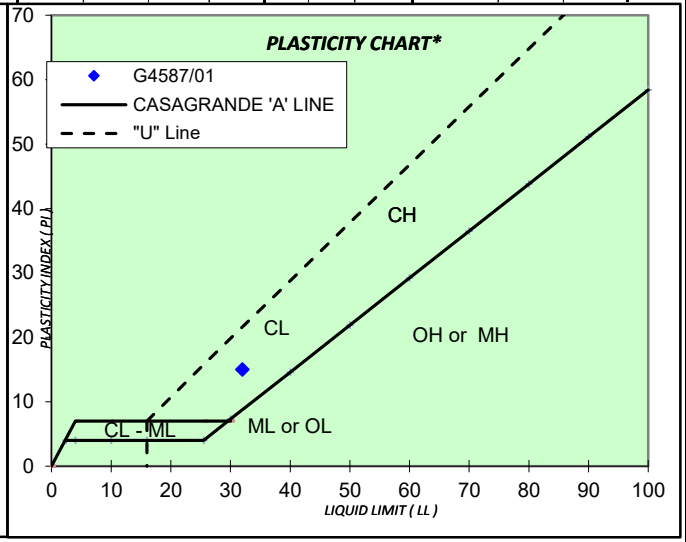
Contract : **Frik Roets Dam** **Job No:** G4587/01 **Date Received : 15-Jan-26**

Description : **TP1 Frik Roets Dam - uncrushed material** **Date Tested: 16-Jan-26**

Depth (m)	Sample No.	Description (Unified Soil Classification - ASTM D2487*)	Sieve analysis Cumulative percentage passing											Soil Mortar Analysis % of mat. <2,00 mm*				Effective size*	Uniformity - coef.*	Curvature coef.*	Grading modulus*	Atterberg Limits			Classifications*			
			50,0 mm	37,5 mm	28,0 mm	20,0 mm	14,0 mm	5,0 mm	2,00 mm	0,425 mm	0,075 mm	0,05 mm*	0,005 mm*	0,002 mm*	Coarse sand <2,0 >0,425mm	Fine sand <0,425 >0,075mm	Silt <0,05 >0,005mm	Clay <0,005 mm					Liquid Limit	Plasticity Index	Linear Shrinkage	Unified Soil	COLTO	US.Highway	Group Index
0.00	G4587/01	drk Red. Orange Clayey sand	100	100	99	99	97	91	87	84	49	41.5	39.4	26.5	3.6	40.5	2.4	45.2	<0.002	131	0.1	0.8	32	15	7.3	SC	N/A	A-6	4







Remarks: *** tests done at Tshwane (Pretoria) branch*

THIS MATERIAL IS NOT SUITABLE FOR WEARING COARSE AS THE SHRINKAGE PRODUCT IS GREATER THAN 550

pH and Electrical Conductivity not requested

Please note that test results relate solely to the sample submitted to the lab, in the condition in which it was received, based on information and/or instructions provided by the client. Any results may only be reproduced in their entirety with the written consent of Letaba Lab, and any opinions and interpretations expressed fall outside our Quality Document.

Date Issued: 2/Feb/26 *Technical signatory (Name & signature) :* A. Jonker

LABDOC
CIVIL ENGINEERING LABORATORY SERVICES

TESTING LABORATORY
11 Colenso Street, Powerville, Vereeniging,1939
Telephone: 016 421 8015
www.labdoc.co.za

ilac-MRA sanas Testing Laboratory T0875

FINAL REPORT

Client Name:	Konings Kraal Boerdery	**Job Number:**	4071/25
Client Address:	Midvaal	**Date Sampled:**	2025-09-12
		Date Received:	2025-09-12
		Date Tested:	2025-09-12-2025-09-22
Attention:	N/A		
Email	N/A	**Date Reported:**	2025-09-23
Project Name:	Dam Building	**Date Issued:**	2025-09-23
Client Ref:	N/A	**No Of Pages:**	1 of 10

Summurry of Quantities	2 x MDD'S ,2 x CBR'S & 2 x R.ind								
Test(s) Methods Used In Report / Analysis	SANS 3001: GR1	*	SANS 3001: GR30	*					
	SANS 3001: GR10	*	SANS 3001: GR40	*					
	SANS 3001: PR20	*							
	SAMPLING PROCEDURE				***PREPERATION PROCEDURE***				
					TMH5-MD1	#	TMH5-MD2	#	

Location(s) Sampled:	On Site Crushed & Mixed Stockpile
Sampled By:	Client
Sample Condition:	Slightly Moist
Sampling Condition(s):	Sunny
Deviation(s) / Comments :	N/A

Remarks:

1. Test result(s) denoted with * in the above section were conducted and form part our Schedule of accreditation.
2. Test result(s) denoted with # in the above section were conducted and do not form part our Schedule of accreditation.
3. Test result(s) denoted in italics in the above section do not form part of our Schedule of accreditation and were outscourced.
4. The test results presented in this test report pertain only to the areas and or samples tested.
5. All information obtained or created during the performance of laboratory activities and contained in this report is confidential to Labdoc and the recipient of this report.
6. Uncertainty of measurement was not taken into account when reporting the statement of conformity (classification decision rule). Results are reported strictly according to specification limits.
7. This report may only be re-produced or published in their full context.
8. Opinions and interpretations do not form part of our Schedule of accreditation.
9. "a SANAS Accredited Testing Laboratory, No. T0875".

Mr Shuaib Saley (Technical Signatory)

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ilac-MRA sanas Testing Laboratory T0875

DOCUMENT NAME	FULL CLASSIFICATION

CUSTOMER DETAILS

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Client Address:	Midvaal	Client Ref:	N/A
Project Name:	Dam Building	Report Status:	Final

SOIL CLASSIFICATION TEST REPORT

Sample Origin:		On Site Crushed & Mixed Stockpile					
Depth: (m)		N/A					
Sample Description:		Light Red Sand + Fresh Granite					
Sample Number:		**S/25-5488**					
GRADING ANALYSIS - % PASSING (SANS 3001-GR1 & SANS 3001-GR2)	75	100					
	63	100					
	50	97					
	37,5	89					
	28	81					
	20	70					
	14	56					
	5	36					
	2	28					
	0.425	24					
	0.250	19					
	0.150	14					
	0.075	12					
SANS 3001 - # PR5							
	% Coarse Sand	17					
	% Fine Sand	41					
	% Slit & Clay	42					
ATTERBERG LIMITS ANALYSIS (SANS 3001-GR10 & SANS 3001-GR12)							
ATTERBERG LIMITS ANALYSIS (SANS 3001-GR10 & SANS 3001-GR12)	**LL**	23					
	PI	4					
	LS	2,0					
	GM	2,36					
	2GM+10	14,72					
	3GM+10	17,08					
CALIFORNIA BEARING RATIO (SANS 3001-GR20, SANS 3001-GR30 & SANS 3001-GR40)							
MOD AASHTO (SANS GR30)	MDD (KG/M³)	2232					
	OMC %	5,4					
C.B.R (SANS GR40)	COMP MC	5,5					
	SWELL @ 100%	0,2					
C.B.R COMPACTION % (SANS GR40)	100%	57					
	98%	56					
	97%	55					
	95%	53					
	93%	52					
	90%	49					
CLASSIFICATIONS							
CRITERIA	**COLTO -**	G 5					

REMARKS & NOTES	

Kind regards.

Mr Shuaib Saley (Technical Signatory)

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CIVIL ENGINEERING LABORATORY SERVICES

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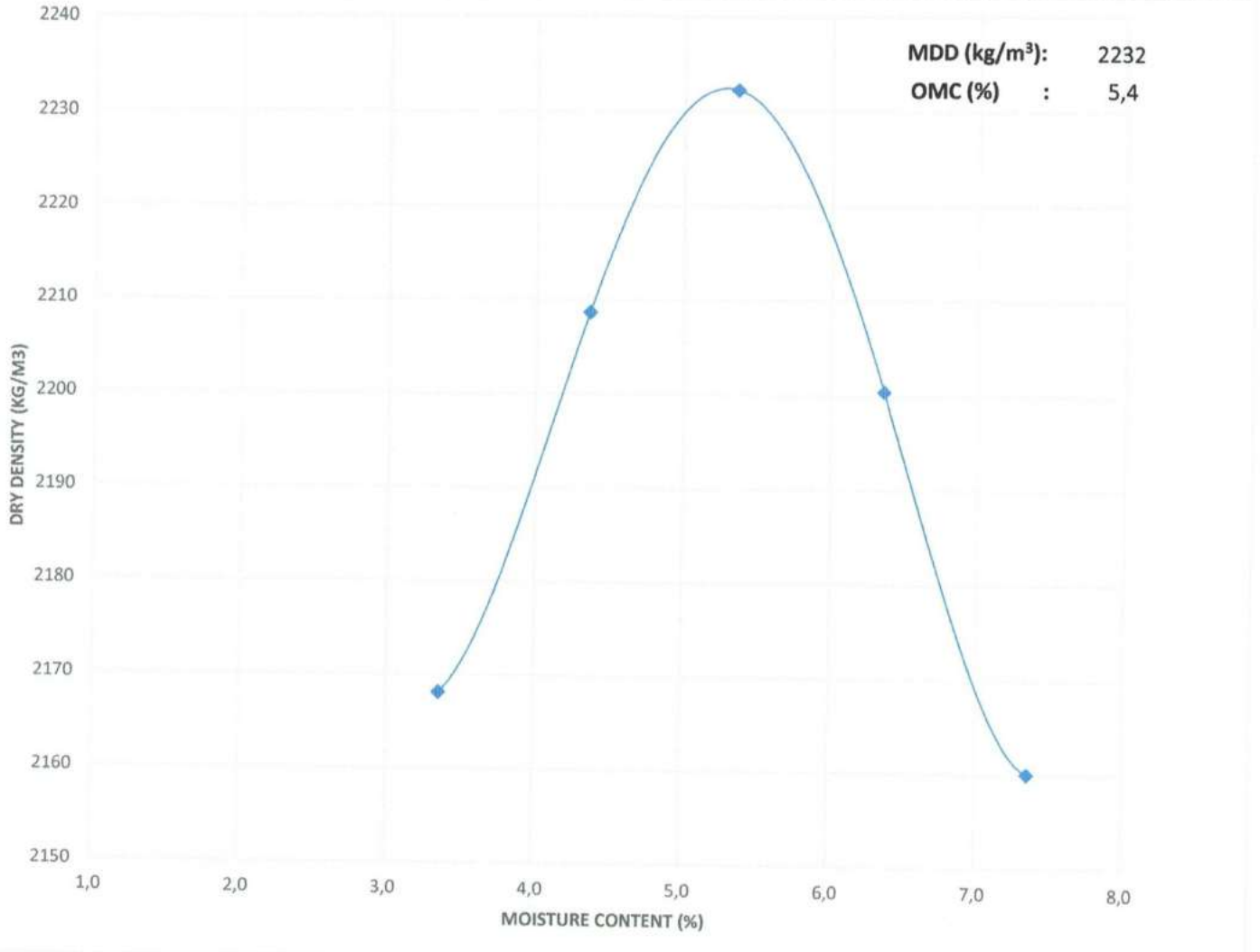
MDD & OMC REPORT: SANS 3001-GR30 & GR20

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Project Name:	Dam Building	Client Ref:	N/A
		Sample Number:	S/25-5488
Sample Origin:	On Site Crushed & Mixed Stockpile	Date Tested:	12/09/2025
Sample Condition:	Moist	Depth (mm):	N/A
Description:	Light Red Sand + Fresh Granite		
Prep Method Used:	Scalping Method		



Compactive Effort: **Mod. AASHTO**

Moisture Content (%):	3,4	4,4	5,4	6,4	7,4		
Dry Density (kg/m³):	2168	2209	2232	2200	2160		

Maximum Dry Density: **2232 kg/m³** **Optimum Moisture Content:** **5,4 %**

Uncertainity of Measurement: _____

Mr Shuaib Saley (Technical Signatory)

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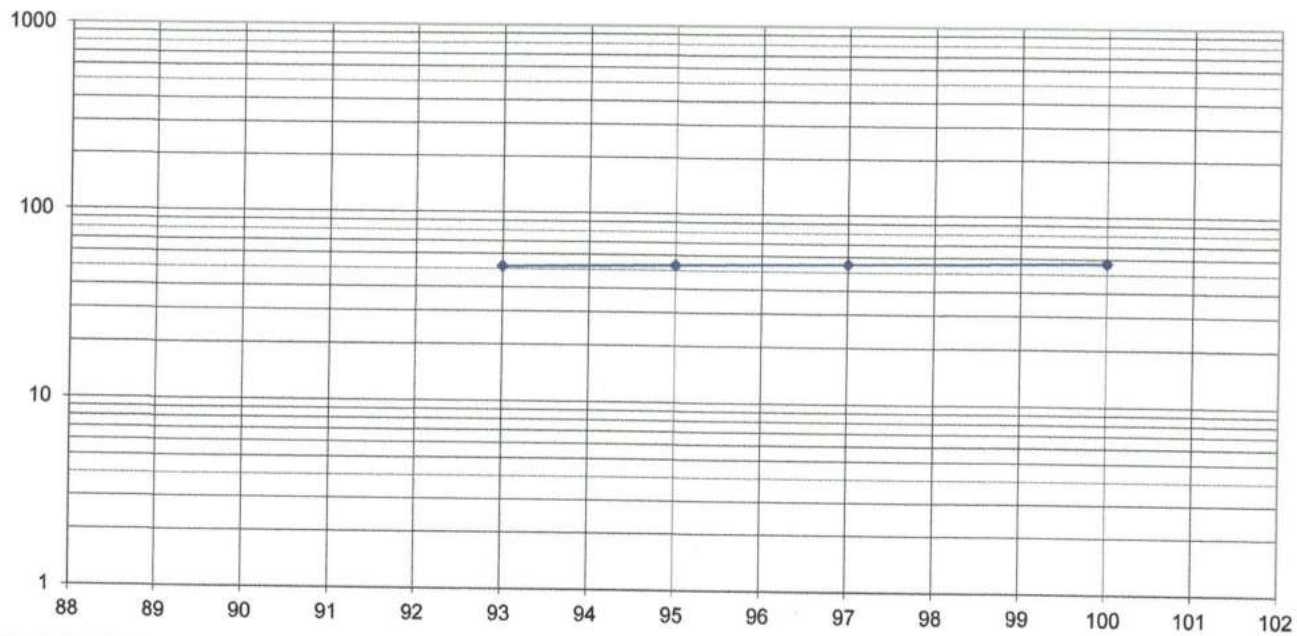
California Bearing Ratio Results

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Project Name:	Dam Building	Client Ref:	N/A
		Sample No:	S/25-5488
Sample Origin:	On Site Crushed & Mixed Stockpile	Date Tested:	12/09/2025
Sample Condition:	Moist	Depth (mm):	N/A
Material Description:	Light Red Sand + Fresh Granite		

CBR at			Swell	Final Moisture Content	Mod AASHTO Data		CBR Compaction Data			
2.5	5.0	7.5			Max Dry Density	Optimum Moisture	Dry Density	Compaction	Moisture Content	Uncertainty of Measurement
(mm)	(mm)	(mm)	(%)	(%)	kg/m³	(%)	kg/m³	(%)	(%)	
56	180	257	0,2	2,8	2232	5,4	2241	100,0	5,5	
55	65	72	0,3	4,1			2150	95,9		
48	56	52	0,5	5,8			2073	92,5		

Interpolated Data							
Compaction	90%	93%	95%	97%	98%	100%
CBR	49	52	53	55	56	57



Uncertainity of Measurement

Remark(s): NA

Mr Shuaib Saley (Technical Signatory)

LABDOC
CIVIL ENGINEERING LABORATORY SERVICES

Labdoc's principal destination of business is located at: 11 Colenso street, Powerville, Vereeniging, 1939.

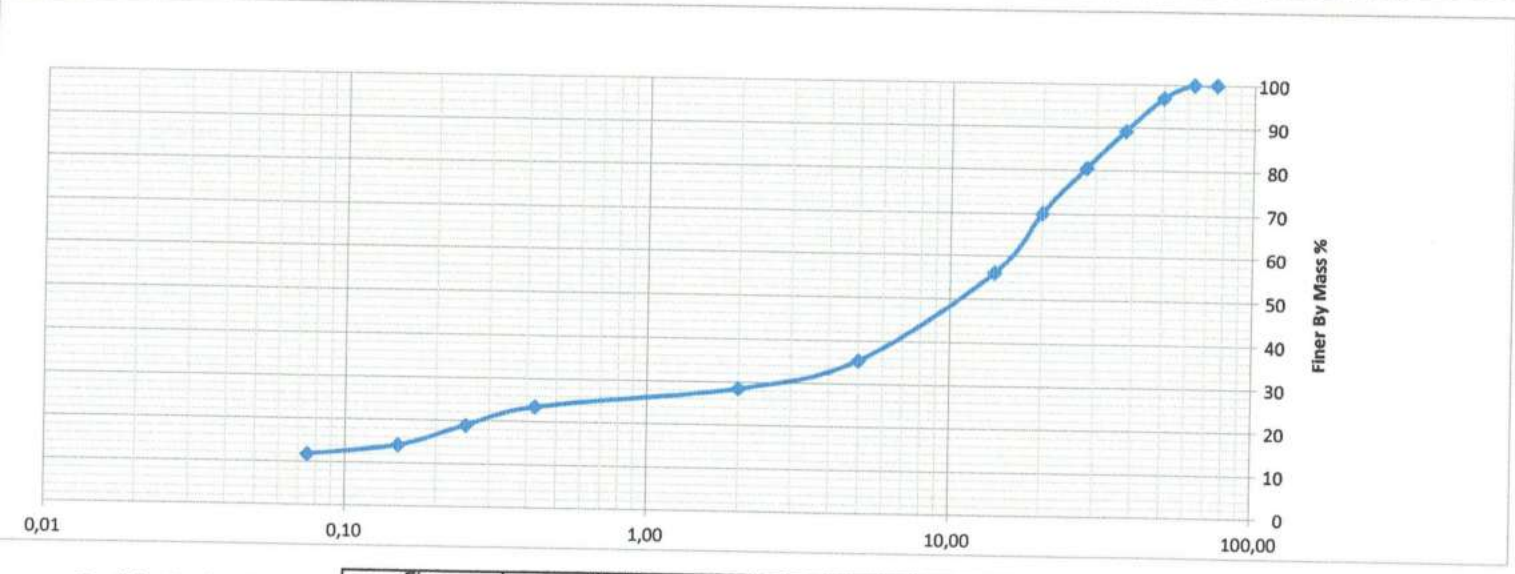
ilac-MRA sanas

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Project Name:	Dam Building	Client Ref:	N/A
Client Address:	Midvaal	Date Reported:	23/09/2025
Sample Condition:	Moist	Date Received:	12/09/2025

Sample No.	S/25-5488		
Material Description:	Light Red Sand + Fresh Granite		
Sample Origin:	On Site Crushed & Mixed Stockpile		
Depth (mm)	N/A		
Sieve Size	% Passing	% Passing	% Passing
75,00	100		
63,00	100		
50,00	97		
37,50	89		
28,00	81		
20,00	70		
14,00	56		
5,00	36		
2,00	28		
0,425	24		
0,25	19		
0,15	14		
0,075	12		

Sample No.	S/25-5488	0	0
% Coarse Sand	17		
%Fine Sand	41		
%Silt and Clay	42		
Liquid Limit	23		
Plastic Limit	19		
Plastic Index	4		
Linear Shrink.	2,0		
Overall P.I.	4		
Grading Modulus	2,36		
H.R.B	A-1-a (0)	A-1-a (0)	A-1-a (0)
Uncertainity of Measurement			

The results reported relate only to the samples tested
Documents may only be reproduced or published in their full context



Particle Size (mm)	Fine	Medium	Coarse	Fine	Medium	Coarse
	Sand			Gravel		

Remarks:

Mr Shuaib Saley (Technical Signatory)

LABDOC
CIVIL ENGINEERING LABORATORY SERVICES

Labdoc's principal destination of business is located at: 11 Colenso street, Powerville, Vereeniging, 1939.

ilac-MRA sanas Testing Laboratory T0875

DOCUMENT NAME	FULL CLASSIFICATION

CUSTOMER DETAILS

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Client Address:	Midvaal	Client Ref:	N/A
Project Name:	Dam Building	Report Status:	Final

SOIL CLASSIFICATION TEST REPORT

Sample Origin:		On Site Crushed & Mixed Stockpile						
Depth: (m)		N/A						
Sample Description:		Light Red Sand + Fresh Granite						
Sample Number:		**S/25-5489**						
GRADING ANALYSIS - % PASSING (SANS 3001-GR1 & SANS 3001-GR2)	75	100						
	63	100						
	50	97						
	37,5	88						
	28	79						
	20	67						
	14	54						
	5	34						
	2	27						
	0.425	22						
	0.250	18						
	0.150	13						
	0.075	10						
SANS 3001 - # PR5								
	% Coarse Sand	18						
	% Fine Sand	46						
	% Slit & Clay	37						
ATTERBERG LIMITS ANALYSIS (SANS 3001-GR10 & SANS 3001-GR12)								
ATTERBERG LIMITS ANALYSIS (SANS 3001-GR10 & SANS 3001-GR12)	**LL**	21						
	PI	5						
	LS	3,0						
	GM	2,40						
	2GM+10	14,8						
	3GM+10	17,2						
CALIFORNIA BEARING RATIO (SANS 3001-GR20, SANS 3001-GR30 & SANS 3001-GR40)								
MOD AASHTO (SANS GR30)	MDD (KG/M³)	2221						
	OMC %	5,3						
C.B.R (SANS GR40)	COMP MC	5,7						
	SWELL @ 100%	0,1						
C.B.R COMPACTION % (SANS GR40)	100%	72						
	98%	63						
	97%	58						
	95%	49						
	93%	40						
	90%	27						
CLASSIFICATIONS								
CRITERIA	**COLTO -**	G 5						

REMARKS & NOTES	

Kind regards.

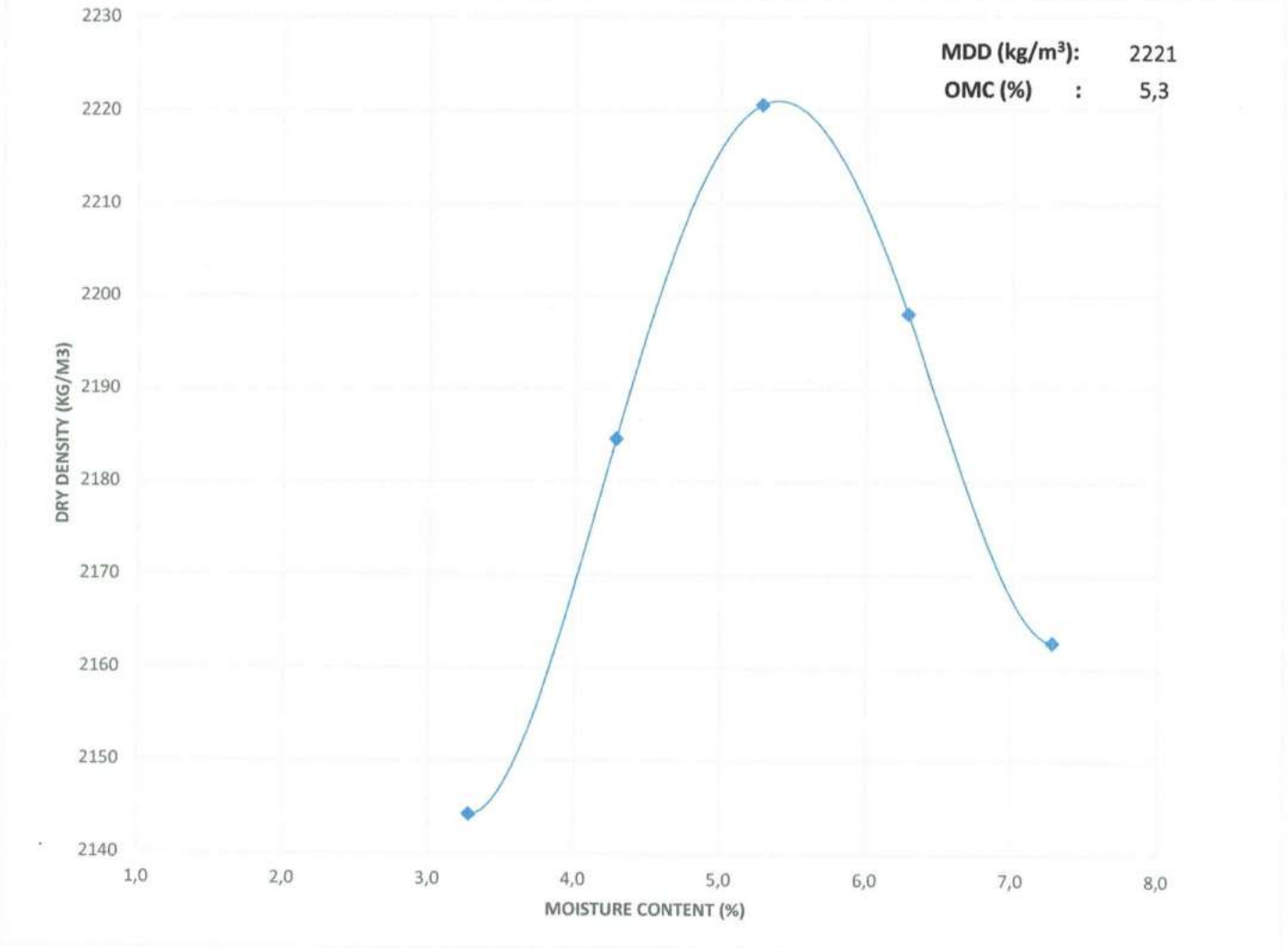
Mr Shuaib Saley (Technical Signatory)

LABDOC
CIVIL ENGINEERING LABORATORY SERVICES

Labdoc's principal destination of business is located at: 11 Colenso street, Powerville, Vereeniging, 1939.

MDD & OMC REPORT: SANS 3001-GR30 & GR20

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Project Name:	Dam Building	Client Ref:	N/A
		Sample Number:	S/25-5489
Sample Origin:	On Site Crushed & Mixed Stockpile	Date Tested:	12/09/2025
Sample Condition:	Moist	Depth (mm):	N/A
Description:	Light Red Sand + Fresh Granite		
Prep Method Used:	Scalping Method		



Compactive Effort: **Mod. AASHTO**

Moisture Content (%):	3,3	4,3	5,3	6,3	7,3		
Dry Density (kg/m³):	2144	2185	2221	2198	2163		

Maximum Dry Density: **2221 kg/m³** **Optimum Moisture Content:** **5,3 %**

Uncertainity of Measurement: _____

Mr Shuaib Saley (Technical Signatory)

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CIVIL ENGINEERING LABORATORY SERVICES

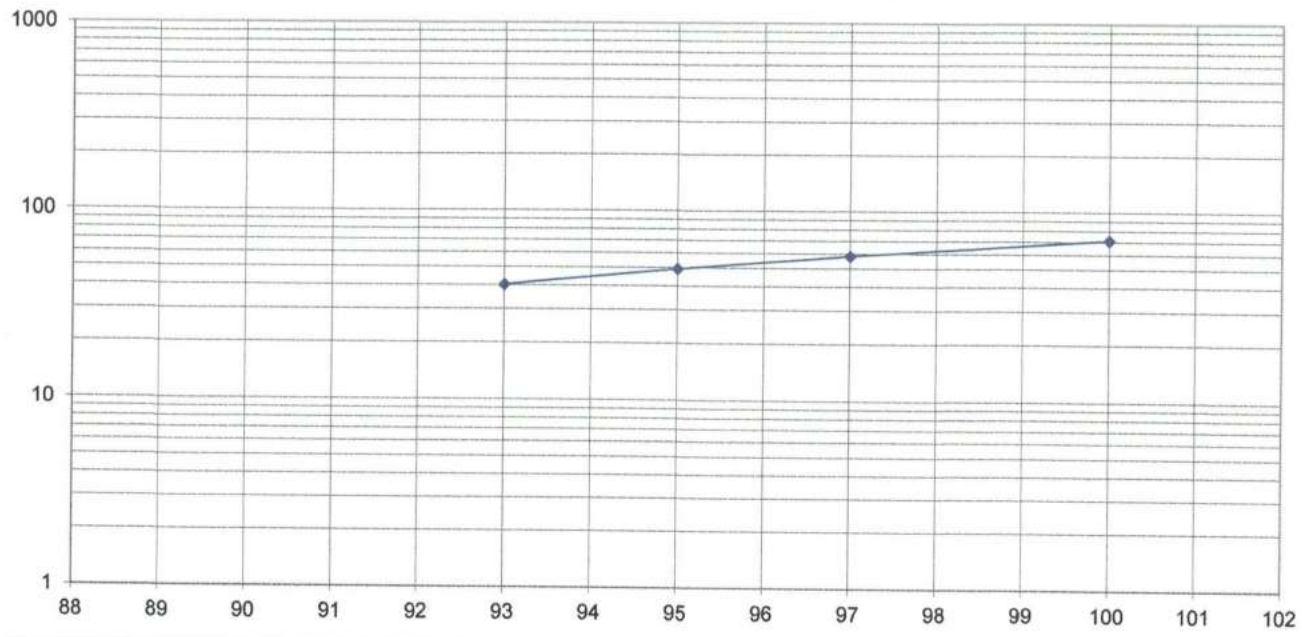
Labdoc's principal destination of business is located at: 11 Colenso street, Powerville, Vereeniging, 1939.

California Bearing Ratio Results

Client Name:	Konings Kraal Boerdery	Job Number:	4071/25
Project Name:	Dam Building	Client Ref:	N/A
		Sample No:	S/25-5489
Sample Origin:	On Site Crushed & Mixed Stockpile	Date Tested:	12/09/2025
Sample Condition:	Moist	Depth (mm):	N/A
Material Description:	Light Red Sand + Fresh Granite		

CBR at			Swell	Final Moisture Content	Mod AASHTO Data		CBR Compaction Data			
2.5	5.0	7.5			Max Dry Density	Optimum Moisture	Dry Density	Compaction	Moisture Content	Uncertainty of Measurement
(mm)	(mm)	(mm)	(%)	(%)	kg/m³	(%)	kg/m³	(%)	(%)	
75	107	123	0,1	3,9	2221	5,3	2210	100,0	5,7	
42	99	117	0,2	4,6			2140	96,8		
31	39	45	0,3	5,3			2014	91,1		

Interpolated Data							
Compaction	90%	93%	95%	97%	98%	100%	
CBR	27	40	49	58	63	72	



Uncertainity of Measurement

Remark(s): NA

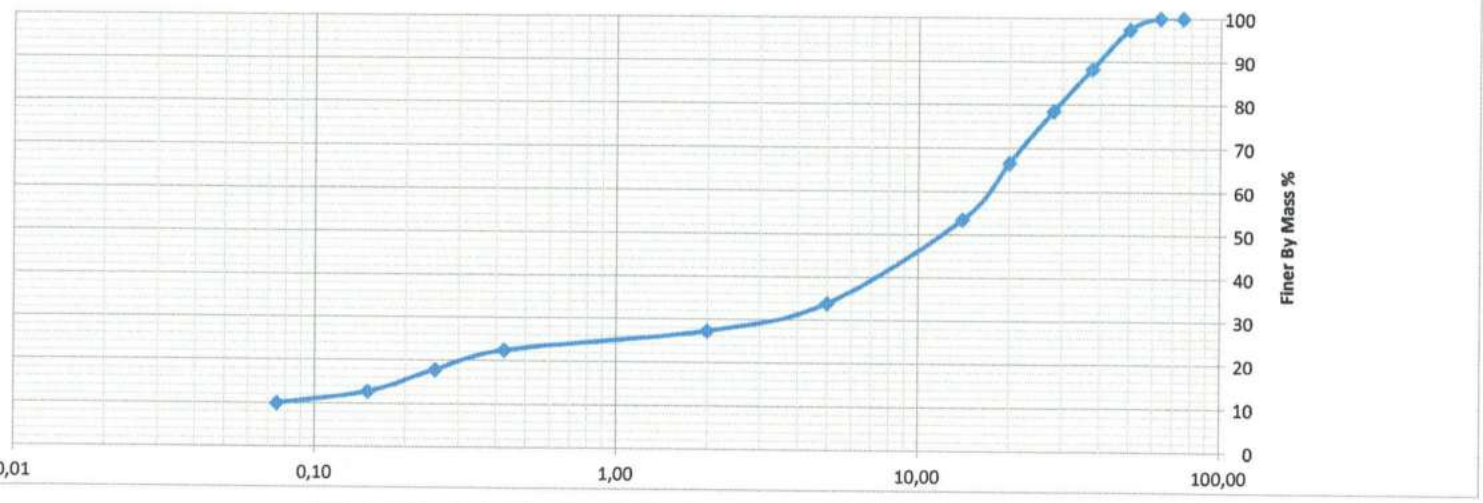
Mr Shuaib Saley (Technical Signatory)

LABDOC
CIVIL ENGINEERING LABORATORY SERVICES

Labdoc's principal destination of business is located at: 11 Colenso street, Powerville, Vereeniging, 1939.

ent Name:	Konings Kraal Boerdery			Job Number:	4071/25	
oject Name:	Dam Building			Client Ref:	N/A	
ent Address:	Midvaal			Date Reported:	23/09/2025	
mple Condition:	Moist			Date Received:	12/09/2025	

mple No.	S/25-5489			Sample No.	S/25-5489	0	0
aterial scription:	Light Red Sand + Fresh Granite						
mple Origin:	On Site Crushed & Mixed Stockpile			% Coarse Sand	18		
pth (mm)	N/A			%Fine Sand	46		
ve Size	% Passing	% Passing	% Passing	%Silt and Clay	37		
75,00	100			Liquid Limit	21		
63,00	100			Plastic Limit	16		
50,00	97			Plastic Index	5		
37,50	88			Linear Shrink.	3,0		
28,00	79			Overall P.I.	5		
20,00	67			Grading Modulus	2,40		
14,00	54			H.R.B	A-1-a (0)	A-1-a (0)	A-1-a (0)
5,00	34			Uncertainity of Measurement			
2,00	27			The results reported relate only to the samples tested Documents may only be reproduced or published in their full context			
0,425	22						
0,25	18						
0,15	13						
0,075	10						



Particle Size (mm)	Fine	Medium	Coarse	Fine	Medium	Coarse
	Sand			Gravel		

narks:

Mr Shuaib Saley (Technical Signatory)

Field Soils Sampling Plan

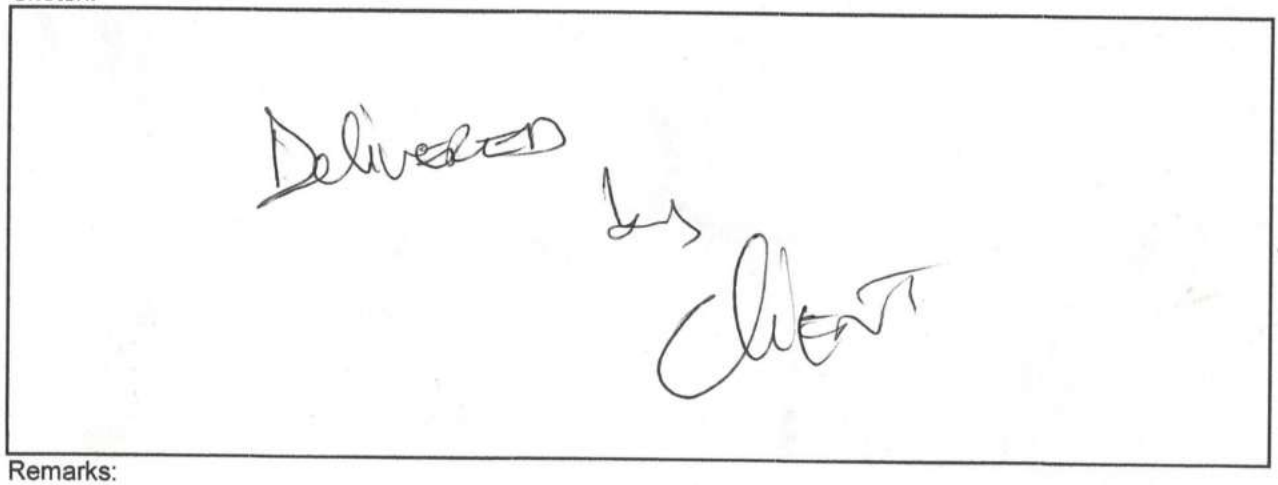
Client	konings kraal Boerdery	Sampled by:	Client
Project	DAM BUILDING	Date Sampled:	12/09/2025
Project No.	4071/25	Time Sampled :	N/A
Client Address		Sample Condition:	Slightly moist
Equipment used when sampling	N/A	Sample Description/ colour	

Field Sample Ref.	Depth (mm)	Lab. Sample Ref.	Number and Type of Samples	Location					Conditions / Remarks
				Test pit	Stockpile	Pavement layer	Other	Sampling Method	
On site Crushed & mixed S/pile	N/A	SLS-5488	1XF/C		✓				
11		SLS-5489	1XFC		✓				

Weather Conditions:

Hot		Cold		Sunny	✓	Cloudy		Windy		Rainy		Dusty	

Sketch:



Remarks:

Legend:	L = Large Bag	S = Small Bag	B = Block Sample	T = Tube sample	M = Moisture Content

Client Name: F.C. Rocks

Client Signature:

Technician Name: _____

Technician Signature: _____

APPENDIX E – GUNDEL SPECIFICATIONS

Gundle Geosynthetics

SUGGESTED SUBGRADE PREPARATIONS

The Civil Contractor shall be responsible for preparing and maintaining the subgrade in a condition suitable for the installation of the liner unless specifically agreed otherwise.

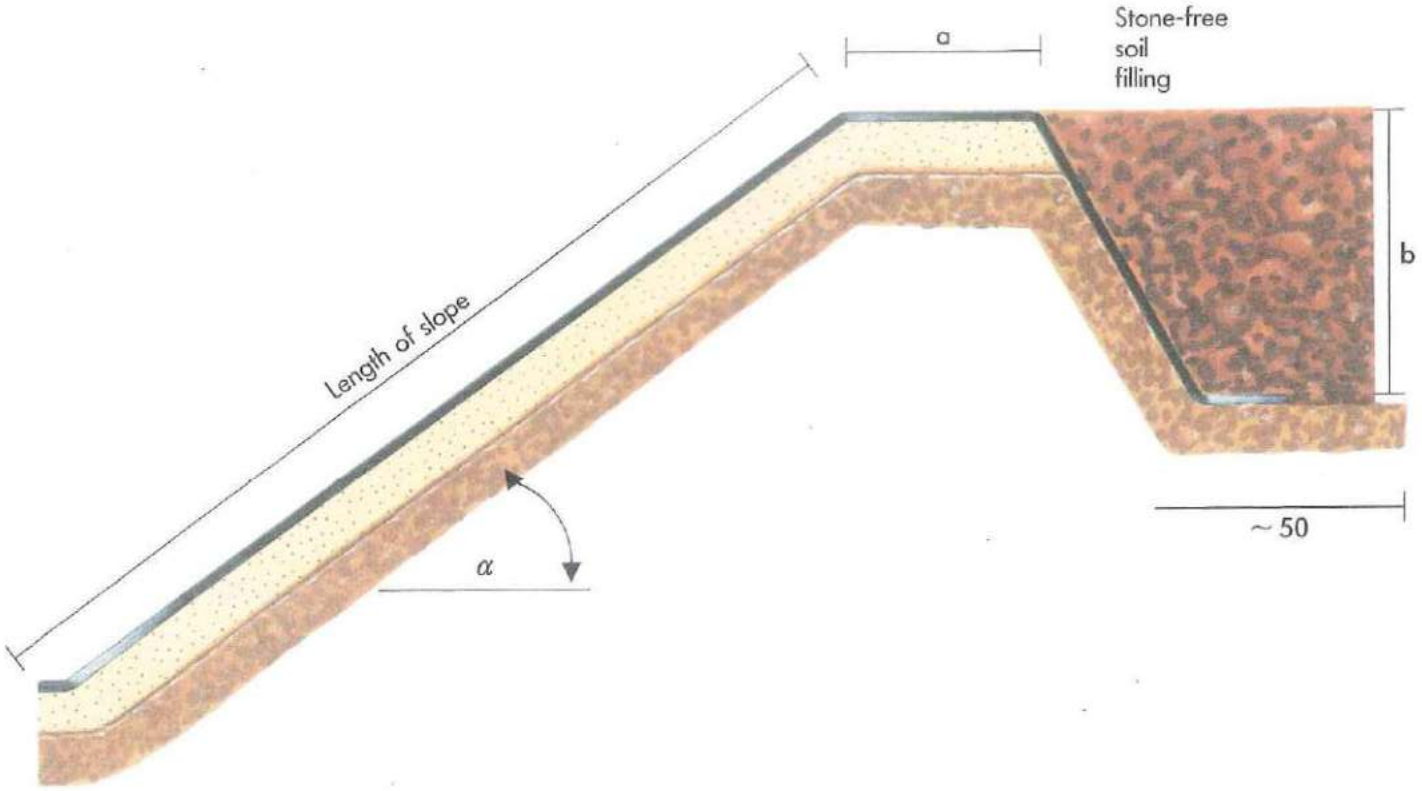
1. Surfaces to be lined shall be smooth and free of debris, roots and angular or sharp rocks larger than 15 mm in diameter to a depth of 150 mm, depending on liner thickness. All fill shall consist of well graded material free of organics, trash, clay balls, sharp stones or other material that may cause damage to the liner. The subgrade shall be compacted in accordance with design specifications. It should in no event be compacted below the minimum required to provide a firm unyielding foundation, sufficient to permit the movement of vehicles or other deleterious effects. The subgrade shall have no sudden sharp or abrupt changes in grade. The maximum deviation under a 3 m straight edge should typically be less than 50 mm, depending on the liner type.

2. The Civil Contractor shall protect the subgrade from desiccation, flooding and freezing. Protection, if required, may consist of a thin plastic protective cover (or other material as approved by the Engineer) installed over the completed subgrade until such time as the placement of the geomembrane liner begins. Subgrade found to have unacceptable desiccation cracks or which exhibit swelling, heaving or other similar conditions shall be replaced or reworked by the Civil Contractor to remove these defects.

3. SURFACE ACCEPTANCE: Gundle Geosynthetics shall provide the Client/Manager with a written acceptance of the surface prior to commencing installation. Subsequent repairs to the subgrade and the surface shall remain the responsibility of the Civil Contractor.

Gundle®
GeoSynthetics
www.gundle.co.za

The end of the slope lining is firmly secured in a trench. The sheet is rolled across the full width of the trench floor before the trench is filled, usually with a weakly cohesive sand and gravel mixture well compacted. The size of the trench is usually dependent on the length of the slope. For small slopes the following dimensions are adequate: depth 50 cm; width 40 cm; crown width between edge of trench and end of slope 50 cm. For longer slopes (> 10 m) the dimensions of the trench must be larger and the creation of berms is recommended; the waterproofing sheet can then be additionally secured in intermediate trenches filled with earth.



Slope length	a	b
< 10 m	≧ 0,5 m	≧ 0,5 m
10–40 m	≧ 0,8 m	≧ 0,6 m
> 40 m	≧ 1,0 m	≧ 0,8 m

SUGGESTED SITE SUBGRADE & BASIC OPERATIONAL & MAINTENANCE GUIDELINES for GEOMEMBRANE LINED FACILITIES

(Please Note: This information is provided as a generic aid only to the design Engineer when incorporating Geomembrane linings into project works. It is given without prejudice, guarantee nor liability and is based on years of practical experience, extracts from the SANS 1200 D series (D, DA, DB and DE) for earthworks and the SANS 10409 :2005 for Geoemembrane Liners. The Engineer will at all times have responsibility for the final design.

EARTHWORKS

- The Civil Contractor shall be responsible for preparing and maintaining the subgrade in a condition suitable for installation of the liner unless specifically agreed otherwise.
- Surfaces to be lined shall be smooth and free of debris, roots and angular or sharp particles that might proved detrimental to the performance of the liner system. The Maximum size of particles shall typically not exceed 3mm.
- The sub-grade shall be well compacted, dry and stable for the life of structure in accordance with design specifications. The site should be constructed with either a suitable sub surface drainage system and/or gas removal system to prevent build up of pressures from below the liner.
- If the in-situ soil is unsuitable, a sand or fine gravel layer of thickness at least 2.5X the largest dimension of the largest particle size in the in-situ soil (or 50mm whichever is the greater) or a geotextile non woven protector sufficient to meet the above requirements should be used.
- The sub-grade shall be finished to the class of planar flatness as specified by the Engineer and shall have no sudden sharp or abrupt changes in grade. The maximum deviation under a 3m straight edge should typically be less than 50 mm and no abrupt changes greater than 5mm shall be tolerated.
- The Civil Contractor shall protect the sub-grade from desiccation, flooding and freezing. Sub-grade found to have unacceptable desiccation cracks or which exhibit excessive swelling, heaving or other movements shall be replaced or reworked by the Civil Contractor and made good.
- Special attention should be given to the angle between the inside anchor trench face and the adjacent horizontal surface. This can be a location for high stress concentrations and should be radiused as appropriate.

SURFACE ACCEPTANCE

Gundle Geosynthetics shall provide the Client/Site Manager with a written acceptance of the surface prior to commencing installation. Subsequent repairs to the sub-grade and the surface shall remain the responsibility of the Civil Contractor.

ANCHOR TRENCHES

Anchor trenches, as designed by the engineer, should be provided around the perimeter of the lined area. These must be excavated, backfilled and compacted normally in layers by the civil contractor.

CONCRETE WORKS, STRUCTURES & PENETRATIONS

- Structures shall be constructed being mindful of the need to connect flexible liner systems **and related fixing points**. They should be sufficiently strong, durable and smooth and surfaces should be straight and flat to accommodate any drilling and use of any steel anchors. Consideration must be made to the shutter nibs and corners and should be ground smooth as required. The use of a geotextile to protect the liner is also a consideration.
- The structure should be equipped where necessary with a concrete corbel / lip located around the structure in the plane to be occupied by the liner and should have radiused / chamfered corners. At the immediate transition zone between the structure and surrounding earthworks, this should be free of any steps and should be well compacted or **be constructed in such a manner so as to avoid differential settlement.**
- Any structures which will be required to penetrate or support the liner system shall be carefully considered. (eg. Pipes, overflows, footings, sumps, manholes, etc). These should be fitted with appropriate connections as suggested by the Lining Installer.

MAINTENANCE & SAFETY

- The Lining is **slippery** when wet and extreme care has to be taken by all parties during installation, and especially operation. Cat ladders, knotted ropes and life jacket should be considered around lined water structures. We recommend that **fencing** be erected to safeguard people and animals from falling in.
- Regular cutting back of grassed areas adjacent to the lined structure should be done to limit the effects of fire damage.

Appendix B

Site Photographs

SITE PHOTOGRAPHS

Figure 3: North view of the selected site

Figure 4: North-east view of the selected site

Figure 5: East view of the selected site

Figure 6: South-east view of the selected site

Figure 7: South view of the selected site

Figure 8: South-west view of the selected site

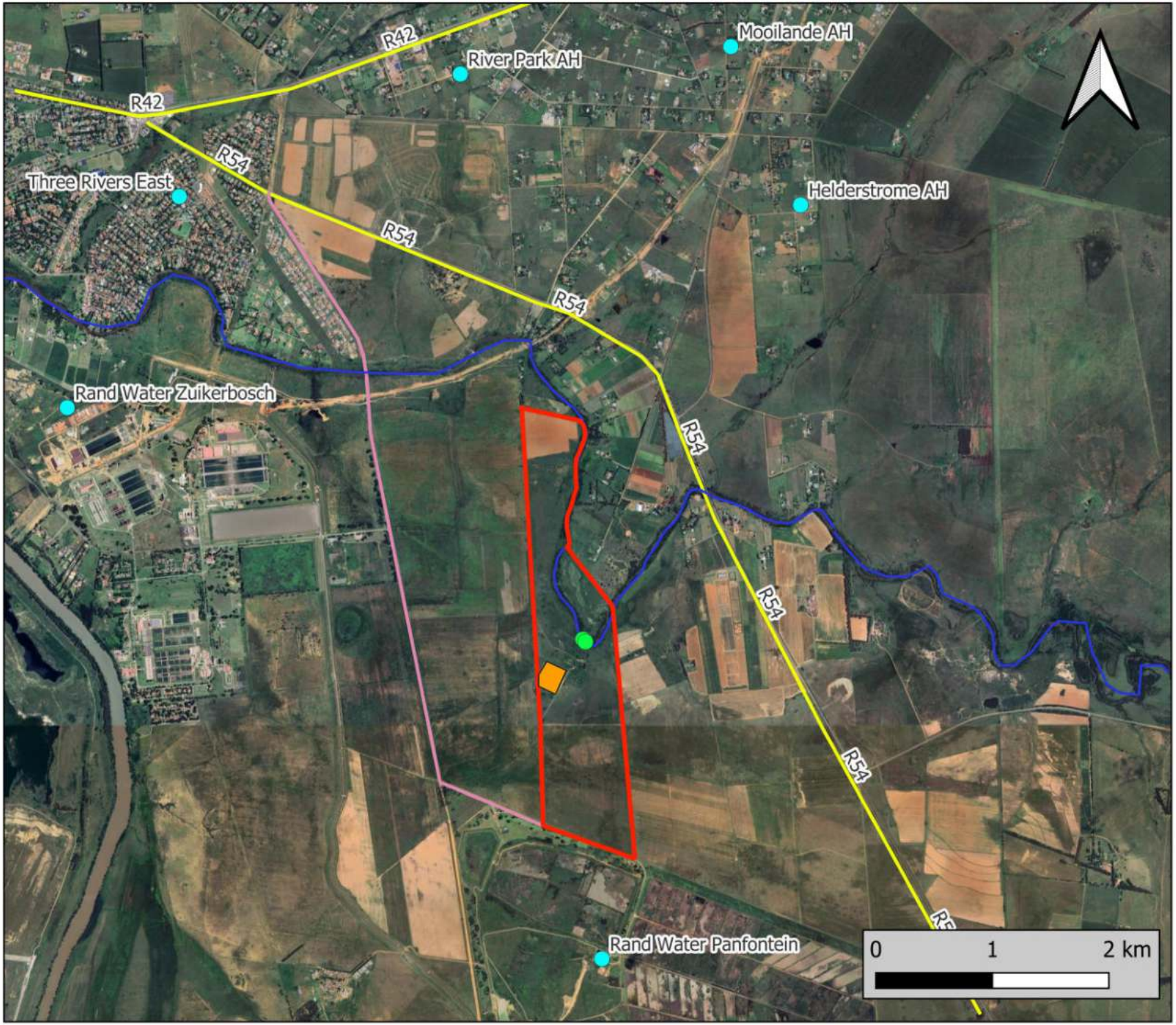
Figure 9: West view of the selected site

Figure 10: North-west view of the selected site

Appendix C

Facility Illustrations

Binneplaas Boerdery: Locality Map (1: 50 000)



Legend

- Project Site Position
- Binneplaas Boerdery Boundary
- Places
- Abstraction Pumps
- Suikerbosrand River
- Major Roads
- Access Roads

Client: Binneplaas Boerdery
Author: CJD Tolken
Datum Projection: WGS 84

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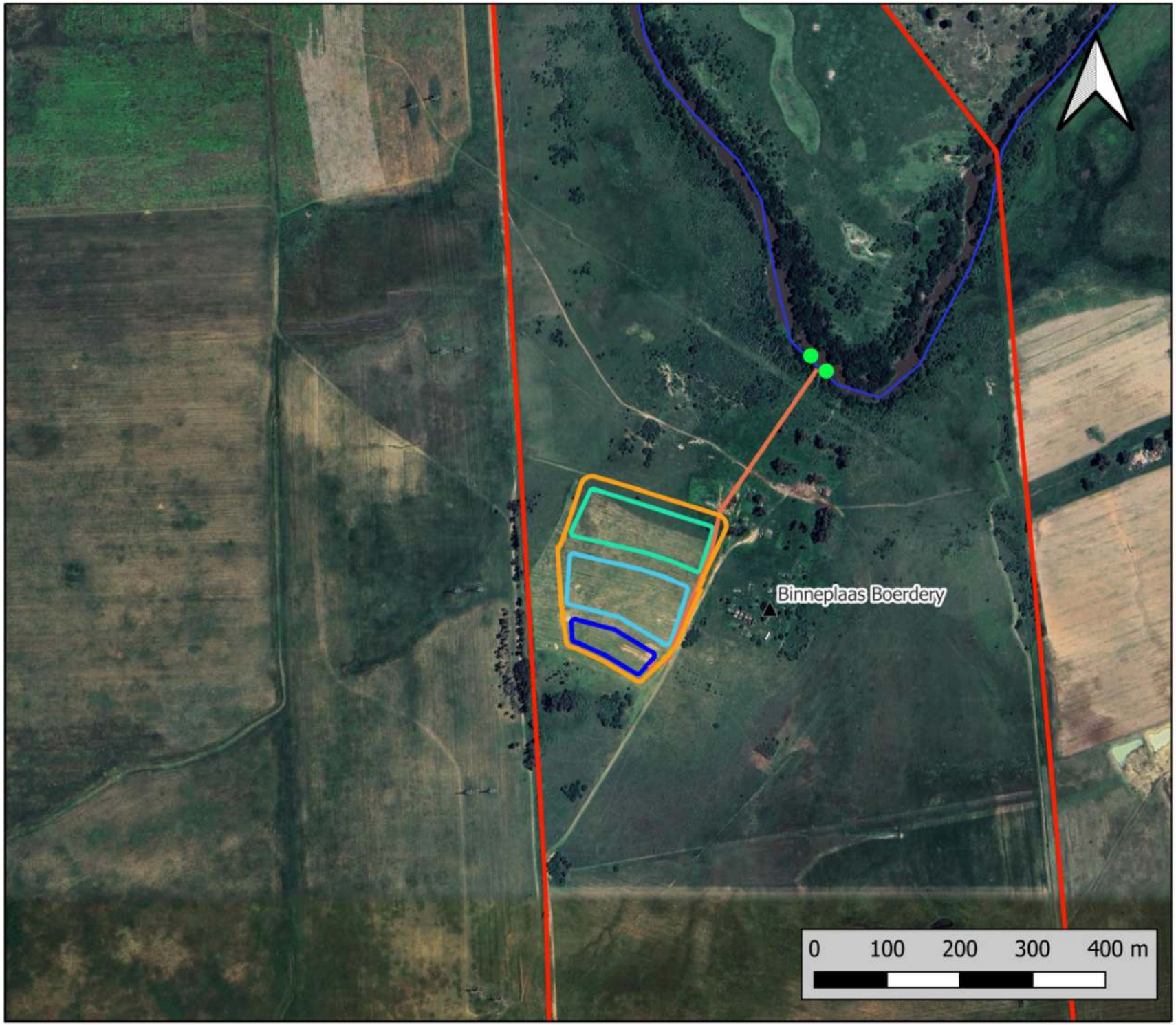
Binneplaas Boerdery: Project Area (1:8 000)



Legend

- Binneplaas Boerdery
- Binneplaas Boerdery Boundary
- Proposed Project Area
- Water Pipes
- Compartment 1
- Compartment 2
- Compartment 3
- Abstraction Pumps

Client: Binneplaas Boerdery
Author: CJD Tolken
Datum Projection: WGS 84

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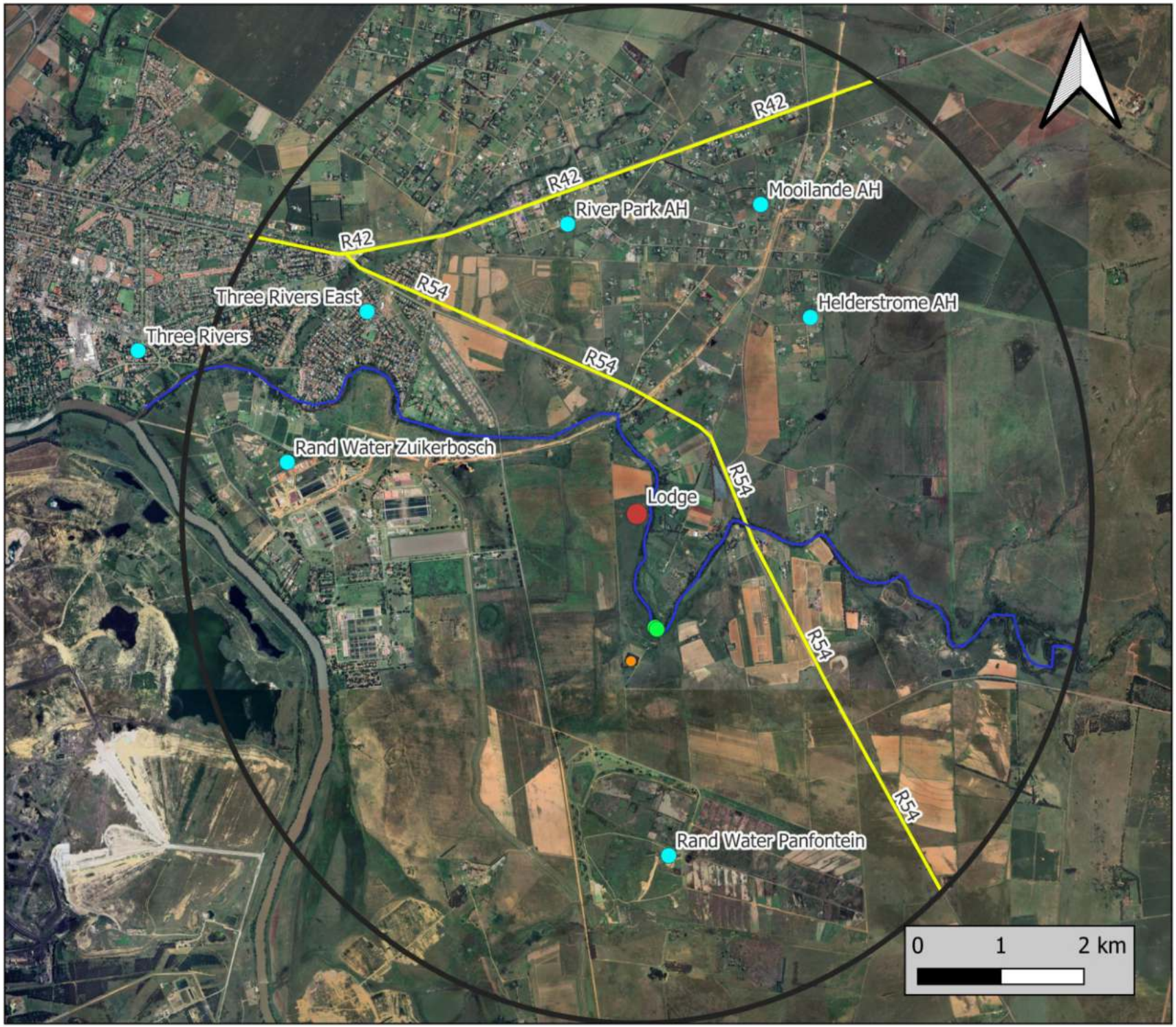
Uitvlugt Farm: Locality Map (1: 70 000)



Legend

- Lodge
- Places
- Abstraction Pumps
- Abstraction Dams
- Suikerbosrantrivier
- Major Roads
- 5 Km Buffer

Client: Uitvlugt Farm
Author:CJD Tolken
Datum Projection: WGS 84

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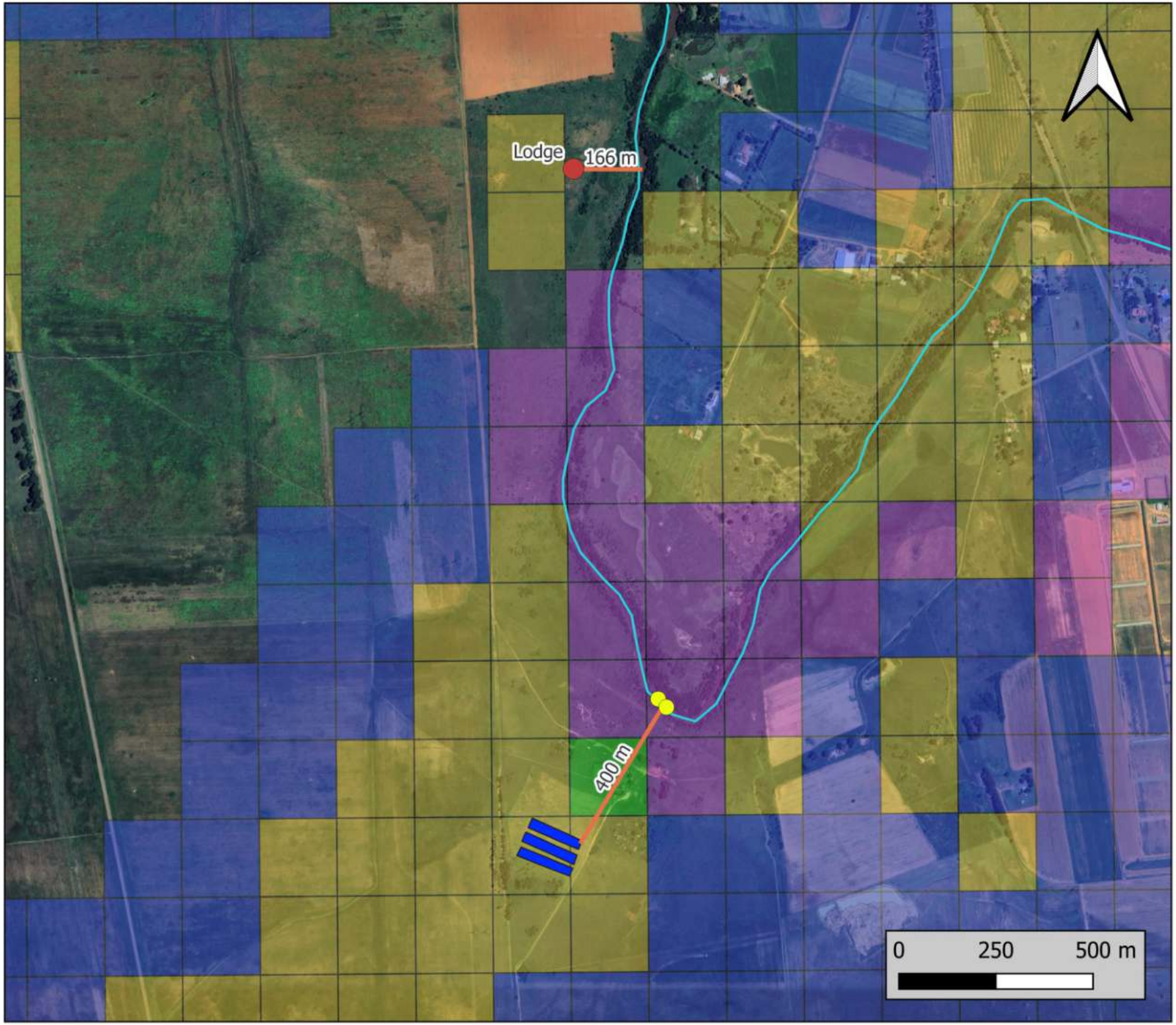
Lodge: Biodiversity Area Map (1: 15 000)



Legend

- Lodge
- Abstraction Pumps
- River
- Distance from River
- Abstraction Dams

Gauteng C-Plan:

- CBA1
- CBA2
- ESA1
- ESA2

Client: Lodge
Author: CJD Tolken
Datum Projection: WGS 84

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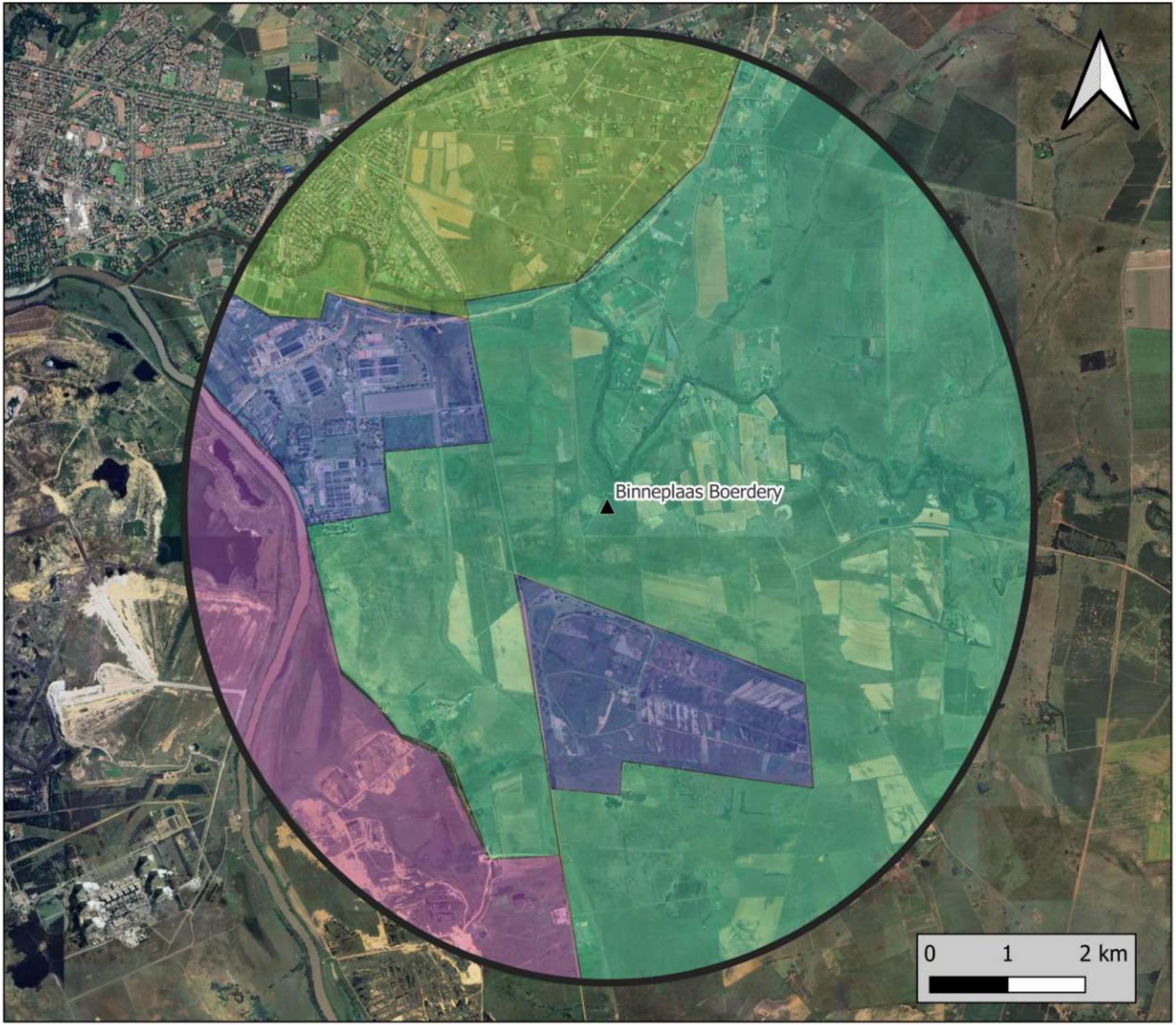
Binneplaas Boerdery: Land Use Map (1: 75 000)



Legend

- Binneplaas Boerdery Point
- 5 Km Buffer

Land Use

- Agriculture
- Industrial
- Mining
- Residential

Coordinates:
26° 41.789'S; 28° 2.226'E

Client: Binneplaas Boerdery
Author: CJD Tolken
Datum Projection: WGS 84

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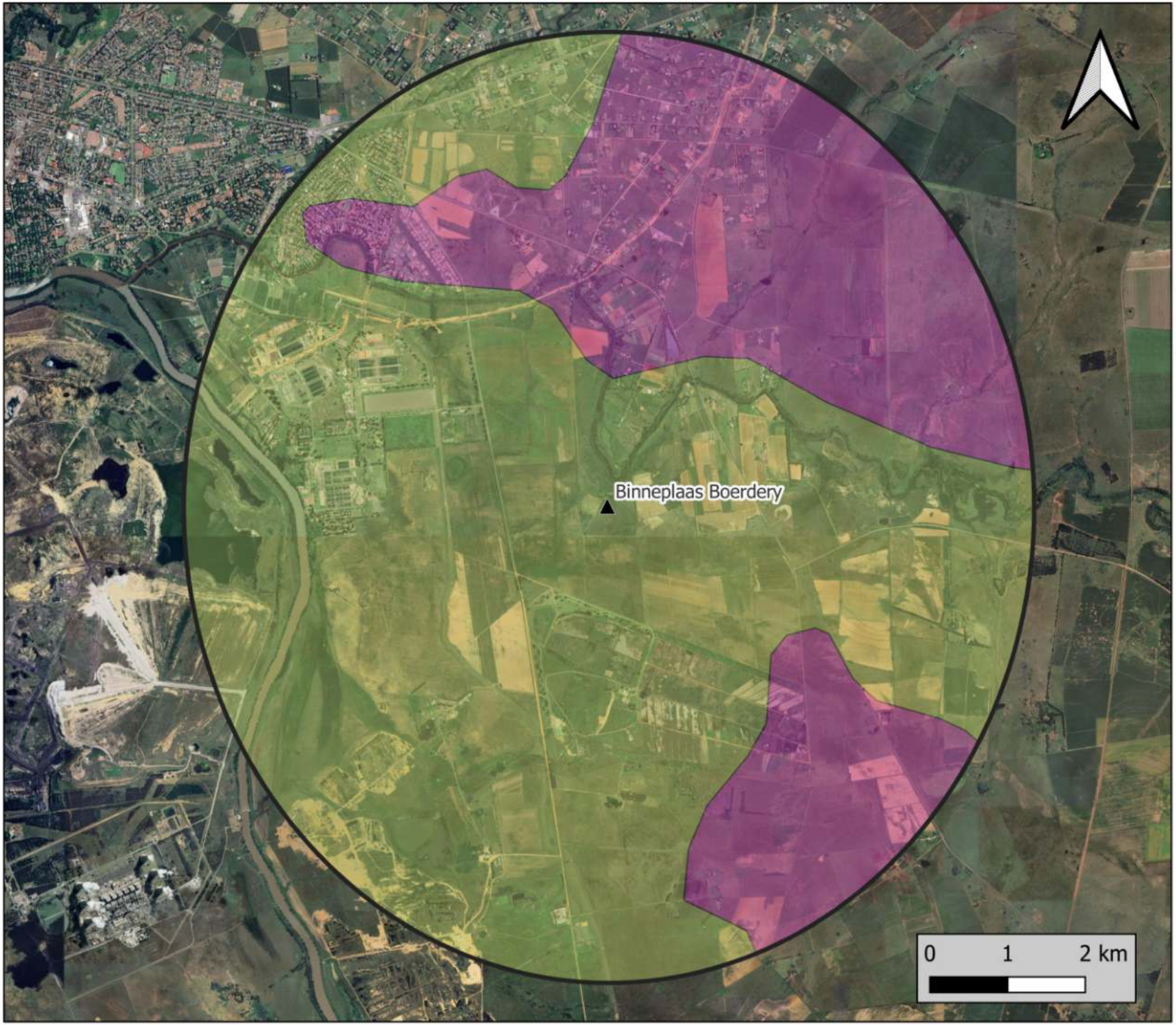
Binneplaas Boerdery: Geology Map (1: 75 000)



Legend

- Binneplaas Boerdery Point
- 5 Km Buffer

Geology

- Mafic and Ultramafic volcanic rocks
- Siliciclastic rocks

Coordinates:
26° 41.789'S; 28° 2.226'E

Client: Binneplaas Boerdery
Author: CJD Tolken
Datum Projection: WGS 84

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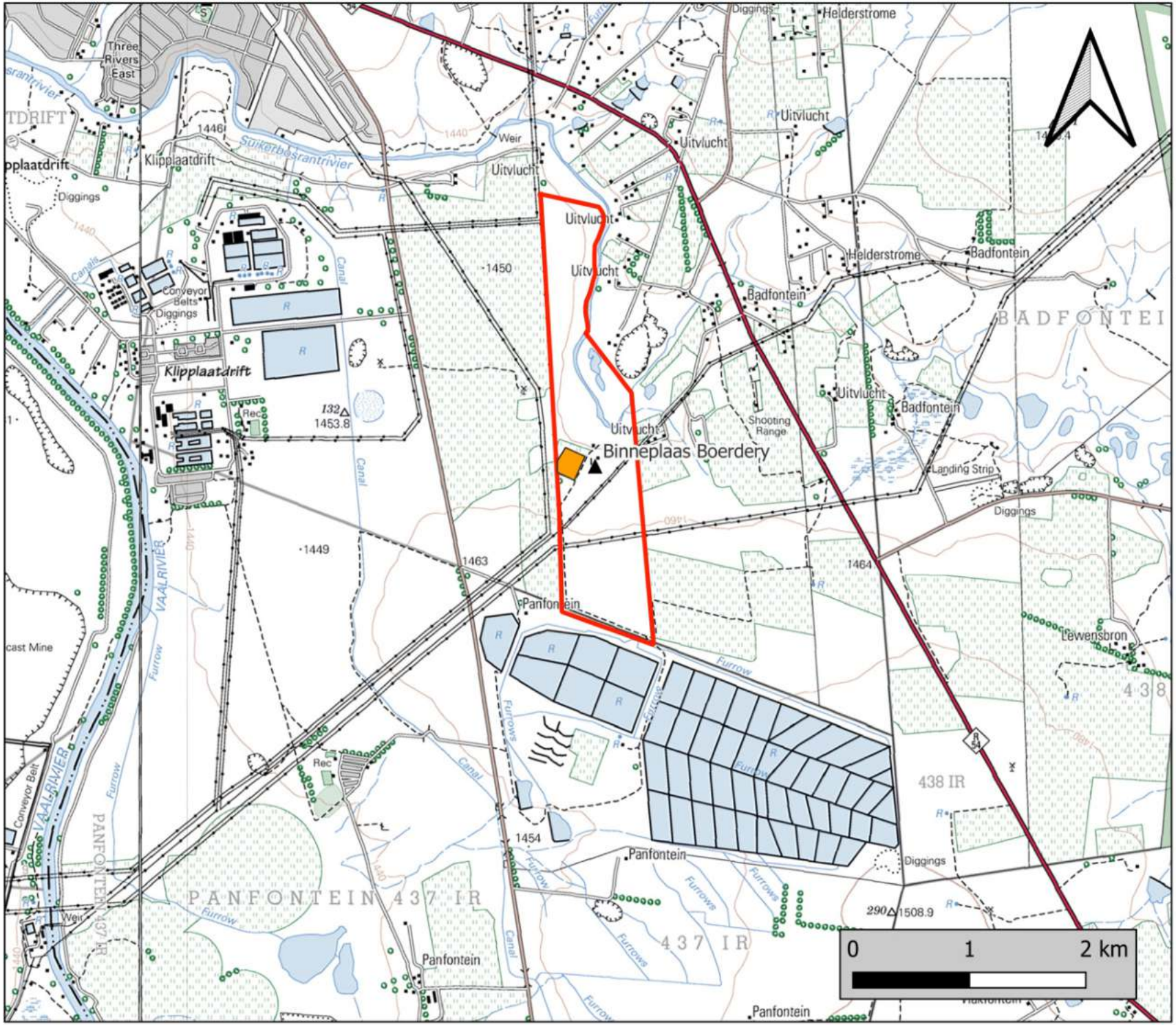
Binneplaas Boerdery: Topographic Map (1: 50 000)



Legend

- Binneplaas Boerdery
- Binneplaas Boerdery Boundary
- Project Site Position

Coordinates:
26°41.789'S; 28°2.226'E

Client: Binneplaas Boerdery
Author: CJD Tolken
Datum Projection: WGS 84

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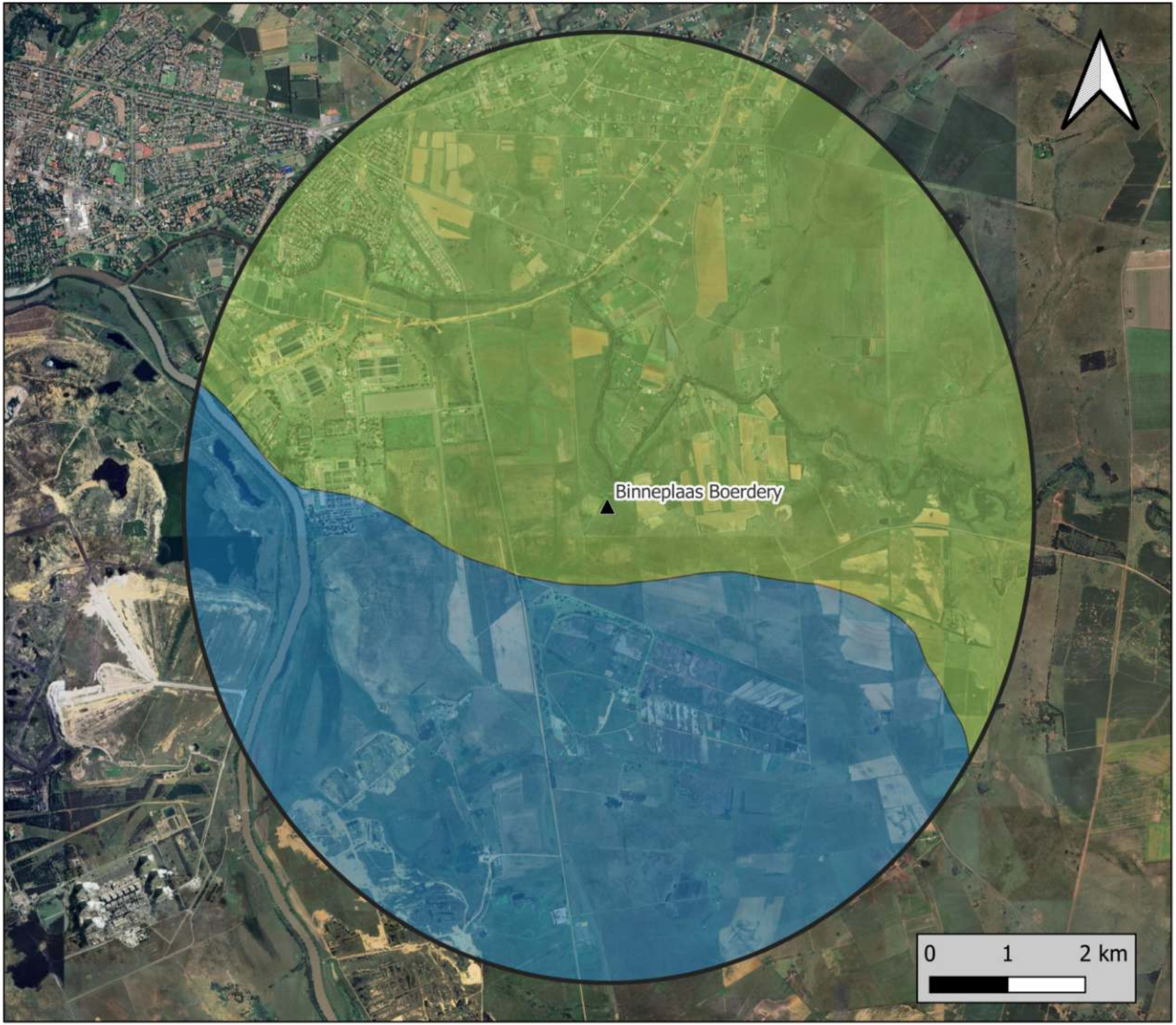
Binneplaas Boerdery: Vegetation Map (1: 75 000)



Legend

- Binneplaas Boerdery Point
- 5 Km Buffer

Vegetation

- Central Free State Grassland
- Soweto Highveld Grassland

Coordinates:
26° 41.789'S; 28° 2.226'E

Client: Binneplaas Boerdery
Author: CJD Tolken
Datum Projection: WGS 84

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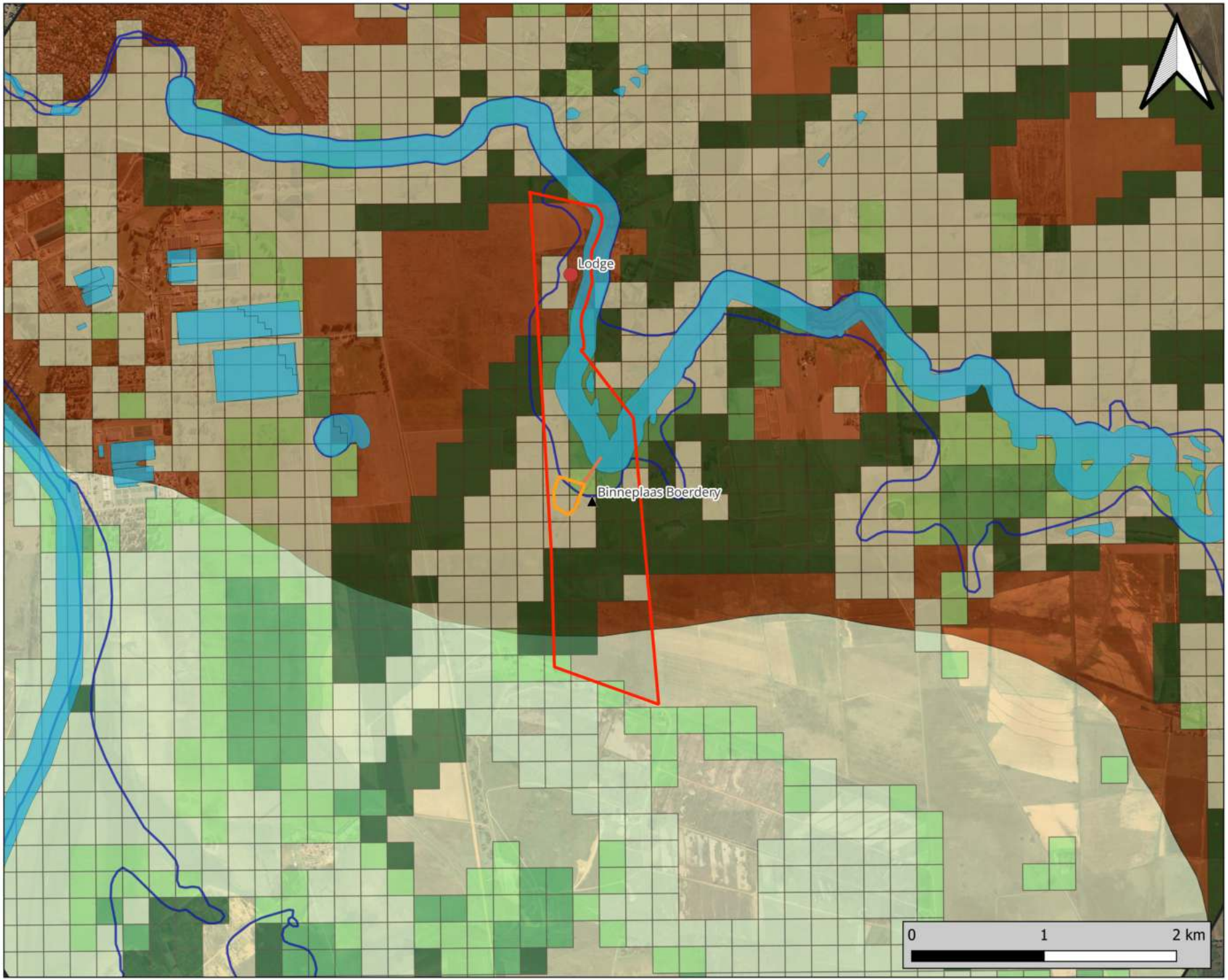
42
47
48
29
12
5
Compartment 3
Compartment 2
Compartment 1

Lodge: Biodiversity Area Map (1: 50 000)



Legend

- Lodge
- Binneplaas Boerdery Point
- Binneplaas Boerdery Boundary
- Proposed Project Area
- Water Pipes
- Buffered

Gauteng C-Plan

- CBA1
- CBA2
- ESA1
- ESA2

Vegetation

- Central Free State Grassland
- Soweto Highveld Grassland
- NFEPA Wetlands
- National Wetland Map V6

Client: Lodge
Author: CJD Tolken
Datum Projection: WGS 84

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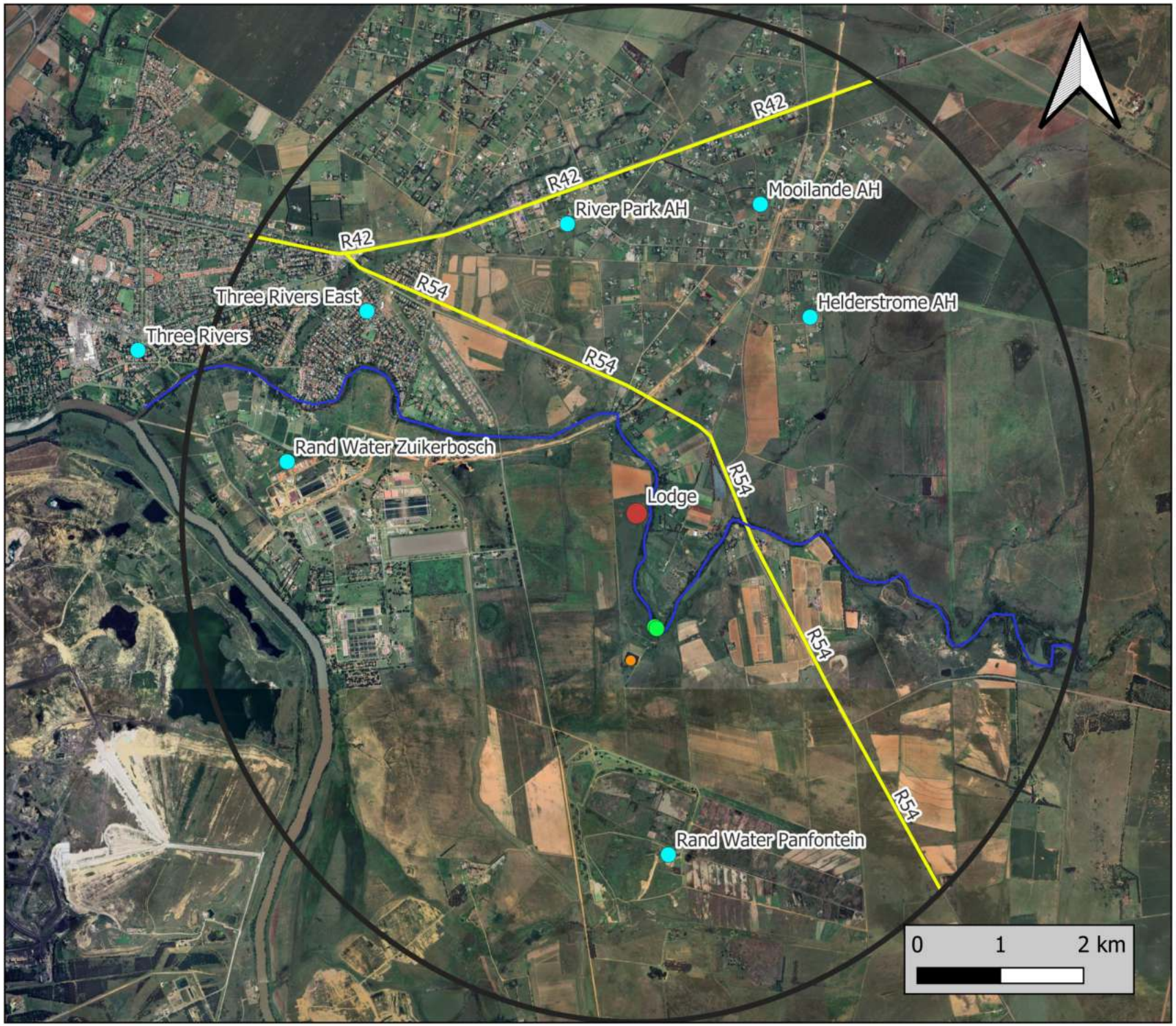
Appendix D

Route Position information

Uitvlugt Farm: Locality Map (1: 70 000)



Legend

- Lodge
- Places
- Abstraction Pumps
- Abstraction Dams
- Suikerbosrantrivier
- Major Roads
- 5 Km Buffer

Client: Uitvlugt Farm
Author:CJD Tolken
Datum Projection: WGS 84

zantow
environmental consulting services

Appendix E

Public Participation

Appendix E-1

Site Notice

NOTICE

This notice is intended to inform stakeholders who have or may wish to register as an Interested and/or Affected Party (I&AP) in order to partake in the EA application process. To obtain further information, raise any issues or concerns, or submit any comments please contact Zantow Environmental at the contact details below within 30 days of this notice.

CONTACT

info@zantow.co.za

083 384 3641

P.O. Box 3858
Vanderbijlpark
1900

DRAFT EA REPORT AVAILABLE AT:

info@zantow.co.za

www.zantow.co.za
(Downloads)

Submit your comments by the 10th of July 2026 to the above contact details.

NOTICE OF AN ENVIRONMENTAL AUTHORISATION FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE REF 002/26-27/E0011

DATE(S) OF THIS NOTICE: 10 JUNE 2026

Applicant: Binneplaas Boerdery

Project: Environmental Authorisation (EA) Application for the Storage of Water in balancing Dams at Binneplaas Boerdery in Cooperville AH, Midvaal Municipality, Gauteng Province.

Location: Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province.

Notice hereby is given that Binneplaas Boerdery is applying for an Environmental Authorisation for the Storage of Water in balancing Dams at Binneplaas Boerdery in Cooperville.

AUTHORIZATIONS REQUIRED

Binneplaas Boerdery proposes to construct three balancing dams at their site located in Cooperville AH, Midvaal Municipality, Gauteng Province. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles. The proposed development triggers the following listed activities:

GNR 983 - Listed activity	**Description of listed activity**
Activity 1	"the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
Activity 27	"The clearance of an area of 1 hectares 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."

Therefore, Binneplaas Boerdery must obtain an Environmental Authorization from the Gauteng Department of Environment (GDENv). Zantow Environmental Consulting Services (Zantow Environmental) was appointed by Binneplaas Boerdery as an independent EAP to facilitate an EA application process.

Karien Zantow
Cell: 083 393 3897
Email: info@zantow.co.za
Postal Address: PO Box 3858, Vanderbijlpark, 1900

Please note that the report in support of the EA application will be available for review from the 9th of June 2026 up to the 10th of July 2026 at the following locations:

Website: www.zantow.co.za
E-mail: info@zantow.co.za (on request)

zantow
environmental consulting services

Binneplaas Boerdery Site Notice Placement

Appendix E-2

Basic Information Document & Written Notice

Dear Sir or Madam,

Date: 10 June 2026

NOTICE OF AN ENVIRONMENTAL AUTHORISATION APPLICATION (Ref 002/26-27/E0011) FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE.

Binneplaas Boerdery is the registered owner of Uitclucht Farm, Portion 9, located within the Midvaal Local Municipality, in Gauteng. The property is currently utilised for agricultural purposes.

Binneplaas Boerdery proposes to construct three balancing dams at their site located in Cooperville AH, Midvaal Municipality, Gauteng Province. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles.

The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations. The proposed project will also require a Water Use Licence to be registered with the Department of Water Affairs; however, this application will run separately from the application for an Environmental Authorisation.

The proposed development triggers the following listed activities:

GNR 983 - Listed activity	Description of listed activity
Activity 1	"the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
Activity 27	"The clearance of an area of 1 hectares 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."

Therefore, Binneplaas Boerdery must obtain an Environmental Authorization from the Gauteng Department of Environment (GDEnv). Zantow Environmental Consulting Services (Zantow Environmental) was appointed by Binneplaas Boerdery as an independent EAP to facilitate an EA application process.

This notice is intended to inform stakeholders who have or may wish to register as an Interested and/or Affected Party (I&AP) in order to partake in the EA application process. To obtain further information, raise any issues or concerns, or submit any comments please contact Zantow Environmental at the contact details below within 30 days of this notice.

Karien Zantow

Cell: 083 384 3641

Email: info@zantow.co.za

PO Box: 3858, Vanderbijlpark, 1900

Please note that the report in support of the EA application will be available for review from the 10th of June 2026 up to the 13th of July 2026 of this notice for 30 days the following locations:

Website: www.zantow.co.za

E-mail: info@zantow.co.za (on request)

If you wish to be registered as an Interested and Affected party, or obtain more information please feel free to contact us at any time.

Yours Sincerely

Karien Zantow

Environmental Assessment Practitioner
EAPASA Reg Nr: 2019/1871
SACNASP Reg Nr: 400114/14

NOTICE OF A ENVIRONMENTAL AUTHORISATION APPLICATION FOR THE FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE

Purpose of the document

This Background Information Document (BID) provides a summary of information about the proposed water use activities and elaborates on the details of the legal processes that will be followed in order to apply for an Environmental Authorisation for the construction of three balancing dams at their site located in Cooperville AH, Midvaal Municipality, Gauteng Province.

The BID is intended as a public document, available to stakeholders who have or may wish to register as an Interested and/or Affected Party (I&AP) in order to partake in the EA application process.

Project background

Binneplaas Boerdery is the registered owner of Uitclucht Farm, Portion 9, located within the Midvaal Local Municipality, in Gauteng. The property is currently utilised for agricultural purposes. The facility has existing water use activities on site.

Binneplaas Boerdery now proposes the construction of three aboveground balancing dams. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity for use by the pumps. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to the irrigation circles.

The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations.

The proposed project will also require a Water Use Licence to be registered with the Department of Water Affairs; however, this application will run separately from the application for an Environmental Authorisation.

Environmental Authorisation required

The proposed construction of balancing dams for electricity generation triggers the following listed activities:

Table 1. GN. R 983 of the EIA Regulations.

Legislation, policy of guideline	Description of compliance
GN. R 983, 8 December 2014. Listing Notice 1, Activity 1	" the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;" *The generation capacity is far below 10MW, but the area of the dams extent more than 1 ha.*
GN. R 983, 8 December 2014. Listing Notice 1, Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014." *Construction of three dams for the storage and use of water for agriculture.*
GN. R 983, 8 December 2014. Listing Notice 1, Activity 27	"The clearance of an area of 1 hectares 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." *Area for clearance of vegetation has been previously disturbed and therefore not considered "indigenous vegetation". To err on the cautious side, the application includes the removal of vegetation for the establishment of the dams and circles.*

Therefore, Binneplaas Boerdery must obtain an Environmental Authorization from the Gauteng Department of Environment (GDENv).

Zantow Environmental Consulting Services (Zantow Environmental) was appointed by Binneplaas Boerdery as an independent EAP to facilitate an EA application process.

Site location

Binneplaas Boerdery is situated on the Portion 9 of Erf 434, Uitvlugt Farm in Cooperville AH, Gauteng Province. The below Figure illustrates the location of the property.

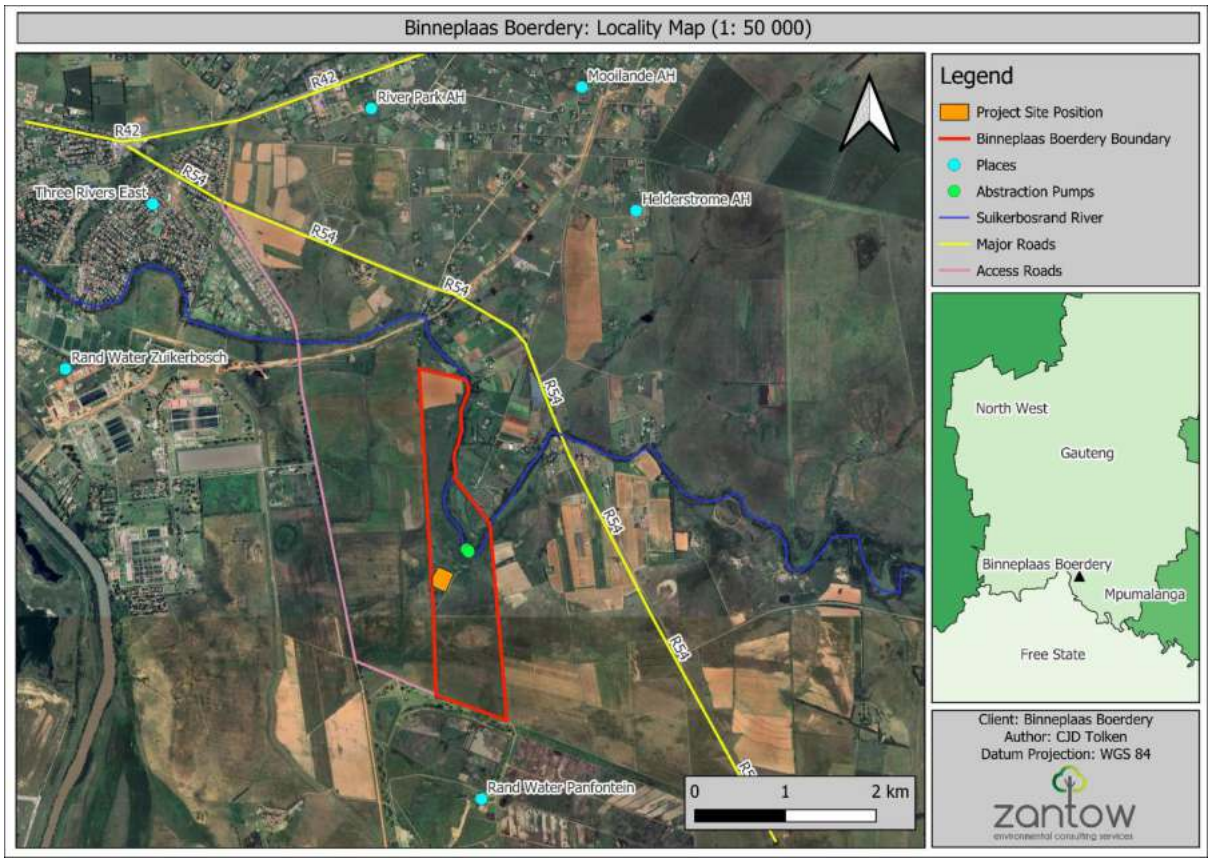


Figure 1: Locality map - Satellite image

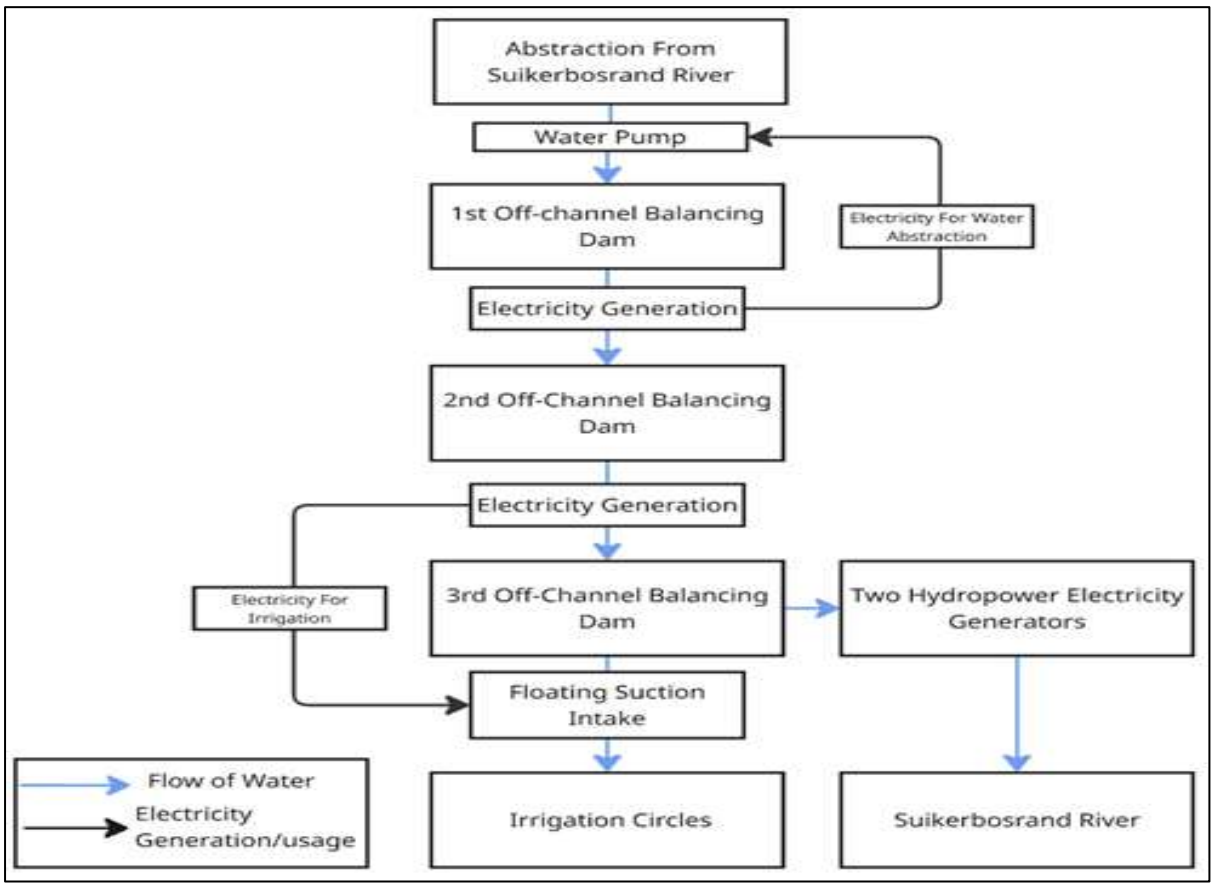


Figure 2: Binneplaas Boerdery Water Use process

NOTICE OF A ENVIRONMENTAL AUTHORISATION APPLICATION FOR THE FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE

Public Participation

A public participation process (PPP) will be undertaken to inform all the identified Interested and/or Affected Parties (I&APs) of the Environmental Authorisation application. A 30-day commenting period will be allocated to allow the I&APs to comment on the Draft Basic Assessment documents. Site notices will be placed at the project site. A Newspaper advertisement will be placed in a local accessible newspaper. Written notices containing the relevant information will be distributed to Identified potential I&APs. If the need arises, a public meeting will be held in order to engage with stakeholders

Karien Zantow

- **Cell:** 083 384 3641
- **Email:** info@zantow.co.za
- **PO Box:** 3858, Vanderbijlpark, 1900

Please note that the report in support of the EA application will be available for review from the **9th of June 2026** up to the **13th of July 2026** of this notice for 30 days the following locations:

- **Website:** www.zantow.co.za
- **E-mail:** info@zantow.co.za (on request)

NOTICE OF A ENVIRONMENTAL AUTHORISATION APPLICATION FOR THE FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE

Please complete the comments sheet below if you wish to register as an I&AP or if you wish to raise any comments regarding the process.

Please Complete and Return Within 60 Days by Post, Fax or Email To:

Contact person: Karien Zantow

Postal address: PO Box 3858, Vanderbijlpark, 1900

Fax: 086 465 3219

E-mail: info@zantow.co.za

Cell: 083 384 3641

Fax: 086 465 3219

Name: _____

Organisation: _____

Postal address:

_____

_____

_____

Tel: _____

Fax: _____

Email: _____

Please register me as an interested or affected party so I may receive further information and notifications during the WUL application process. (Please circle applicable)

Yes **No**

I would like to receive my notifications by (Please circle applicable) **Fax / Post / Email**

Any comments / concerns that you would like to raise at this stage of the project? (Please use additional pages, if required):

Mbali Zwane

From: Mbali Zwane
Sent: Wednesday, 10 June 2026 08:31
To: info@cer.org.za; jnbadmin@wessa.co.za; musa@groundwork.org.za; team@groundwork.org.za
Cc: Karien Zantow
Subject: Notice of an Application and Background Information (BID) for the Environmental Authorisation for Binneplaas Boerdery
Attachments: Binneplaas Boerdery Written Notice.pdf; Binneplaas Boerdery BID.pdf

Tracking:

Recipient	Delivery
info@cer.org.za	
jnbadmin@wessa.co.za	
musa@groundwork.org.za	
team@groundwork.org.za	
Karien Zantow	Delivered: 2026/06/10 08:31

Dear Potential Interested and Affected Party

Please see attached the Notice and Background Information Document for the Application for the application for an Environmental Authorisation for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land Adjacent to the Suikerbosrand River at Binneplaas Boerdery Located in Cooperville AH, Gauteng Province (Ref Nr: 002/26-27/E0011).

If you have any comments or concerns, please submit them by the **13th of July 2026**.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
SACNASP Reg Nr 170448
T: 081 375 4647
E: mbali@zantow.co.za
www.zantow.co.za

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Goeiedag

Sien asseblief aangehegte openbare kennisgewing rakende die Omgewingsmagtigingsaansoek vir die voorgestelde Binneplaas Boerdery-projek in Cooperville AH, Midvaal.

Die Konsep Basiese Assesseringsverslag en Konsep EMPr is beskikbaar vir openbare kommentaar vanaf 9 Junie 2026 tot 13 Julie 2026.

Die verslae is beskikbaar by www.zantow.co.za onder "Downloads", of op versoek.

Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:49

Mr. Patel

+27 66 186 6185

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Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:51

Barry Jacobs

+27 83 654 5195

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Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:53

At Retief

+27 82 413 5393

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Die Konsep Basiese Assesseringsverslag en Konsep EMPr is beskikbaar vir openbare kommentaar vanaf 9 Junie 2026 tot 13 Julie 2026.

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Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:53

Gotso

+27 73 985 2127

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Die verslae is beskikbaar by www.zantow.co.za onder "Downloads", of op versoek.

Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:53 ✓

Anton

+27 72 220 2320

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Sien asseblief aangehegte openbare kennisgewing rakende die Omgewingsmagtigingsaansoek vir die voorgestelde Binneplaas Boerdery-projek in Cooperville AH, Midvaal.

Die Konsep Basiese Assesseringsverslag en Konsep EMPr is beskikbaar vir openbare kommentaar vanaf 9 Junie 2026 tot 13 Julie 2026.

Die verslae is beskikbaar by www.zantow.co.za onder "Downloads", of op versoek.

Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:53 ✓✓

Piet van Eden

+27 82 779 3435

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Die verslae is beskikbaar by www.zantow.co.za onder "Downloads", of op versoek.

Kommentaar of registrasie as Belangstellende en Geaffekteerde Party kan gestuur word aan:

Karien Zantow
Zantow Environmental Consulting Services CC
Sel: 083 384 3641
E-pos: karien@zantow.co.za

09:53

Johan Scheepers

+27 83 400 1255

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Appendix E-3

Newspaper Advert

NOTICE OF AN ENVIRONMENTAL AUTHORISATION APPLICATION (Ref 002/26-27/E0011) FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE

Applicant: Binneplaas Boerdery

Project: Environmental Authorisation Application for the Storage of Water in balancing Dams at Binneplaas Boerdery in Cooperville AH, Midvaal Municipality, Gauteng Province.

Location: Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province.

Notice hereby given that Binneplaas Boerdery is applying for an Environmental Authorisation for the Storage of Water in balancing Dams for the use in hydropower and irrigation activities.

Environmental Authorizations Required

Binneplaas Boerdery proposes to construct three balancing dams at their site located in Cooperville AH, Midvaal Municipality, Gauteng Province. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles. The proposed development triggers the following listed activities:

GNR 983 - Listed activity	Description of listed activity
Activity 1	"the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
Activity 27	"The clearance of an area of 1 hectares 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."

Therefore, Binneplaas Boerdery must obtain an Environmental Authorization from the Gauteng Department of Environment (GDENv). Zantow Environmental Consulting Services (Zantow Environmental) was appointed by Binneplaas Boerdery as an independent EAP to facilitate an EA application process.

Date(s) of this notice: 10th June 2026

This notice is intended to inform stakeholders who have or may wish to register as an Interested and/or Affected Party (I&AP) in order to partake in the EA application process. To obtain further information, raise any issues or concerns, or submit any comments please contact Zantow Environmental at the contact details below within 30 days of this notice.

Karien Zantow
Cell: 083 384 3641
Email: info@zantow.co.za
PO Box: 3858, Vanderbijlpark, 1900

Please note that the report in support of the EA application will be available for review from the 10th of June 2026 up to the 13th of July 2026 of this notice for a 30 day period at the following locations:

Website: www.zantow.co.za
E-mail: info@zantow.co.za (on request)

Legals

Legals@citizen.co.za

Number 670703 5168 08 1 Married out of community of property in respect of certain: A Unit consisting of (a)Section No. 19 as shown and more fully described on Sectional Plan No SS 319/2002 in the scheme known as DU SOUTH II in respect of the land and building or buildings situated at ERF 573 HATFIELD TOWNSHIP, LOCAL AUTHORITY: CITY OF TSHWANE METROPOLITAN MUNICIPALITY, of which section the floor area, according to the said sectional plan is 40 (Forty) square metres in extent and (b)An undivided share in the common property in the scheme apportioned to the said section in accordance with the participation quota as endorsed on the said sectional plan. HELD BY Deed of Transfer Number ST 8699/2023 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deed at PRETORIA within two weeks from the date of publication of this notice. Dated at ROODEPOORT on this 2ND Day of May 2026 ANDRE WOLFAARDT

———————LV030804

ST884/2008 (Unit) (21)
SCENIC ROUTE TRADING 337 CC

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Certificate of Registered Sectional Title ST884/2008 (Unit) (21) issued in favour of SCENIC ROUTE TRADING 337 CC, Registration Number 2004 /103317/23 in respect of Section Number 21 as shown and more fully described on Sectional Plan Number SS 884 /2008 in the scheme known as ECCLESA in respect of the land and building or buildings situated at REMAINING EXTENT OF ERF 131 HEIDELBERG TOWNSHIP, LOCAL AUTHORITY: LESEDI LOCAL MUNICIPALITY, which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds: North Gauteng at Pretoria at 600 Lilian Ngoyi Street Pretoria Central, Pretoria, 0002 within two weeks from the date of the publication of this notice. Dated at Heidelberg on 27 May 2026 Liebenberg Malan Mofolo Inc 20 Ueckermann Street 1438 Tel: (016) 341 4164 Email: dudaney@lmprok.co.za

———————AC011056

T 38271/2013
ROCKETT G A & W GW
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of DEED OF TRANSFER T 38271/2013 dated 31 MAY 2013 passed by The Executors in the Estate Late HEATHER ANN PAYN Number 28428/2012 In favour of 1.GRAEME ALEXANDER ROCKETT Born on 2 January 1966 Married out of community of property as to a 31% undivided share in the undermentioned property 2. WALTER GWILLIAM ROCKETT Identity Number 310719 5049 18 4 Married, which marriage is governed by the laws of ENGLAND as to a 69% undivided share in the undermentioned Property; In respect of certain PORTION 62 OF ERF 1097 PAULSHOF EXTENSION 79 TOWNSHIP REGISTRATION DIVISION I.R. THE PROVINCE OF GAUTENG MEASURING 437 (FOUR HUNDRED AND THIRTY SEVEN) Square Metres; which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deed at North Gauteng, 600 Lilian Ngoyi Street, PRETORIA within two weeks from the date of publication of this notice. Dated at JOHANNESBURG this 8th JUNE 2026 Applicant: ADAM CRESWICK ATTORNEYS Address: 21 ORANGE STREET, COR THE AVENUE, ORCHARDS, JOHANNESBURG E-mail address: betsy @adamcreswick.co.za Contact number: 083 415 2057

———————TB000858

T 4253/2014
ROCKETT N M
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of DEED OF TRANSFER T 4253/2014 dated 23 JANUARY 2014 passed by Executor in the Estate Late WALTER GWILLIAM ROCKETT Number 23746/2013 In favour of NORMA MARGARET ROCKETT Identity Number 360204 0034 18 3 Widow In respect of certain A 69% undivided share in and to: PORTION 62 OF ERF 1097 PAULSHOF EXTENSION 79 TOWNSHIP REGISTRATION DIVISION I.R. THE PROVINCE OF GAUTENG MEASURING 437 (FOUR HUNDRED AND THIRTY SEVEN) Square Metres; which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deed at North Gauteng, 600 Lilian Ngoyi Street, PRETORIA within two weeks from the date of publication of this notice. Dated at JOHANNESBURG this 8th JUNE 2026 Applicant: ADAM CRESWICK ATTORNEYS Address: 21 ORANGE STREET, COR THE AVENUE, ORCHARDS, JOHANNESBURG E- mail address: betsy @adamcreswick.co.za Contact number: 083 415 2057

———————TB000859

T 43735/2010
KAPLAN B S & H T
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer T 43735/2010 passed by ESTATE LATE ABRAHAM DAVID KAPLAN Number 3715 /2010, in favour of. BEVERLY SUSAN KAPLAN, Identity Number 761216 0075 08 6, Unmarried and HARLEY TEVYA KAPLAN, Identity Number 790523 5055 08 7, Unmarried in respect of certain ERF 527 SYDENHAM TOWNSHIP, REGISTRATION DIVISION IR, PROVINCE OF GAUTENG and ERF 528 SYDENHAM TOWNSHIP, REGISTRATION DIVISION IR, PROVINCE OF GAUTENG which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds at Deeds Office Information Section, Mezzanine Floor, 208-212 Marble Towers Building, c/n Von Weilligh & Pritchard Street, Johannesburg within two weeks from the date of the publication of this notice. Dated at Pretoria this day of 2026 Applicant WERNER ADRIAAN DURAND VR ATTORNEYS Address: 221 Gordon Road, Hatfield Pretoria E -mail address: chantelle @vrinc.co.za Contact number: 012 342 7861

———————CK066917

T 53671 10
PIETERS H S & S S
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of T 53671 10 passed by Registrar of Deeds: North Gauteng at Pretoria in favour of 1. HENDRIK SHRISTOFFEL PIETERS Identity Number 600525 5019 088 2.SUSANNA SUSARA PIETERS ESTATE NO 1491/2016 Identity Number 690120 0094 087 MARRIED IN COMMUNITY OF PROPERTY TO EACH OTHER in respect of certain ERF 853 WELVERDIEND TOWNSHIP REGISTRATION DIVISION I.Q. PROVINCE OF GAUTENG MEASURING 1041 (ONE THOUSAND AND FOURTY ONE) SQUARE METRES HELD BY DEED OF TRANSFER T53671/2010 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deed at North Gauteng at Pretoria within two weeks from the date of publication of this notice. Dated at this Day of APPLICANTS: Hendrik Christoffel Pieters in his capacity as Executor and surviving Spouse of Estate Late SUSANNA SUSARA PIETERS ADDRESS:C/O Es Botes Attorneys, 20 Monument Avenue, Lyttelton Manor, 0157 E-MAIL ADDRESS: rensie @esbotesattorneys.co.za Telephone Number 0824661939

———————BH029147

T104277/2004
GILDENHUYS P L & & A S
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the deeds Registries Act 1937, of the intention to apply of the issue of a certified copy of Deed of Transfer T104277/2004 passed by: MARGRIET BANTJES Identity number: 520830 0130 089 Unmarried in favour of: 1. PERCY LANCELOT GILDENHUYS Identity Number 670917 5188 08 5 Married out of community of property 2. ANNA SUSANNA GILDENHUYS Identity Number 670625 0015 08 4 Married out of community of property over REMAINING EXTENT OF ERF 238 HESTEAPARK EXTENSION 8 TOWNSHIP REGISTRATION DIVISION J.R., PROVINCE OF GAUTENG MEASURING 453 (FOUR HUNDRED AND FIFTY THREE) Square metres HELD BY DEED OF TRANSFER NUMBER T104277/2004 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds NORTH GAUTENG at PRETORIA at: 600 LILIAN NGOYI STREET, BEREA PARK, PRETORIA, 0001 within two weeks from the date of the publication of this notice. DATED at PRETORIA on Applicant ` W D SAAYMAN ATTORNEYS 231 MARJORAM AVENUE, ANNLIN, PRETORIA E-mail lindie@wdsaayman.co.za Tel: 0861 133 555

———————MA017189

T11352/2003
The Trustees for the time being of RAASHAD GANI FAMILY TRUST

Notice is hereby given that under the provisions of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of the Deed of transfer number T11352 /2003 dated 26 February 2003 passed by RAMESH NARAN Identity Number 520218 5012 08 2 Married out of community of property, in favour of The Trustees for the time being of RAASHAD GANI FAMILY TRUST NO IT9270/2002, in respect of ERF 450 MAYFAIR WEST TOWNSHIP, REGISTRATION DIVISION I.Q., THE PROVINCE OF GAUTENG IN EXTENT 538 (FIVE HUNDRED AND THIRTY EIGHT) SQUARE METRES, which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge same in writing with the Registrar of Deeds South Gauteng at Johannesburg, Deeds office Information Section, 6TH Floor, 28 Harrison Street, Johannesburg, within 2(two) weeks from date of the publication of this notice. Dated at Johannesburg on this 13th May 2026 MUHAMMAD RAHEEM GANI C/O Wadee Attorneys 51 Rifle Range Road Ridgeway 2013 Tel: +27116801075 Email: wadeeatt@icon.co.za

———————LV030806

T116/2017
MPEMBE T S & P E & M W & P B
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer T116/2017 passed by MAUREEN SEBOLELO NTSALA (previously NOGE) Identity Number: 740725 0338 08 4 And MMUSO SAMSON NTSALA Identity Number: 680107 5623 087 Married in community of property to each other in favour of THABETHE SIMON MPEMBE Identity Number 581102 5897 08 8 and PHAHLAKAZE ESTHER MPEMBE Identity Number 560219 0779 08 0 Married in community of property to each other And MZONDASE WILLIAM MPEMBE Identity Number 620110 5871 08 9 and PAULINA BUYISILE MPEMBE Identity Number 620427 0436 08 4 Married in community of property to each other The registered owners of: ERF 5748 KROONSTAD EXTENSION 50 DISTRICT KROONSTAD PROVINCE FREE STATE IN EXTENT: 1008 (ONE THOUSAND AND EIGHT) SQUARE METRES which has been lost or destroyed. All persons having objection to the issue of such copy are hereby required to lodge the same in writing with the REGISTRAR OF DEEDS: FREE STATE at BLOEMFONTEIN within two weeks after the date of the publication of this notice. Dated at on Applicant YVETTE BRIGITTE BAIA LPCM NUMBER: M14628 STBB ATTORNEYS 105 BOEING ROAD EAST BEDFORDVIEW REF NR WV024449 / e-mail: yvetteb@stbb.co.za

———————TB000842

T12618/2011
RAMAMOTIVE INVESTMENTS PROPRIETARY LIMITED

Notice is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer T12618/2011 Passed by: REALTILE TIMRITE PROPRIETARY LIMITED REGISTRATION NUMBER: 2004/014553/07 In favour of: RAMAMOTIVE INVESTMENTS PROPRIETARY LIMITED REGISTRATION NUMBER: 2009/009853/07 In respect of: PORTION 13 (A PORTION OF PORTION 4) OF THE FARM LOUWS CREEK NO. 271 REGISTRATION DIVISION J.U., PROVINCE OF MPUMALANGA Which has been lost or destroyed. All interested persons having objection to issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds Mpumalanga at Nelspruit situated at 25 Bell Street, Old BMW Building, Nelspruit, 1200 within two weeks from date of the publication of this notice. Dated at NELSPRUIT this Signature of Applicant: LESEDI MANYIKE Annemarie Swanepoel Attorneys Address: Corner House, Ground Floor, cnr Russell & Nel Streets, Nelspruit 1200 E -mail address: lesedi@aswanepoel.co.za Contact number: 013 752 4908

———————LV030823

T137678/2002
SACHSE D G & J M
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the deeds Registries Act 1937, of the intention to apply of the issue of a certified copy of Deed of Transfer T137678/2002 passed by: 1. The insolvent estate of HERMANUS JACOBUS ROUX Identity Number: 690310 5101 082 Married out of community of property NO.T2946/02 dated 8 August 2002 2.GEZINA JOHANNA ROUX Identity Number: 700624 0129 080 Married out of community of property in favour of: 1.DIRK GUSTAV SACHSE Identity Number: 570209 5005 084 Married out of community of property 2.JOHANNA MARIA SACHSE Identity Number: 571118 0013 085 Married out of community of property over PORTION 31 (a portion of Portion 30) OF ERF 50 MOUNTAIN VIEW (PTA) TOWNSHIP REGISTRATION DIVISION J.R., PROVINCE OF GAUTENG MEASURING 660 (SIX SIX ZERO) Square metres HELD BY Deed of Transfer Number T137678 /2002 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds NORTH GAUTENG at PRETORIA at: 600 LILIAN NGOYI STREET, BEREA PARK, PRETORIA, 0001 within two weeks from the date of the publication of this notice. DATED at PRETORIA on Applicant ` W D SAAYMAN ATTORNEYS 231 MARJORAM AVENUE, ANNLIN, PRETORIA E-mail sashin@wdsaayman.co.za Tel: 0861 133 555

———————MA017188

T1380/1973 FULL GOSPEL CHURCH OF GOD IN SOUTHERN AFRICA - KRUGERSDORP WEST

Notice is hereby given in terms of Regulation 68 of the Deeds Registries Act,1937, of the intention to apply for the issue of a certified copy of Deed of Transfer Number T1380/1973, passed by In favour of FULL GOSPEL CHURCH OF GOD IN SOUTHERN AFRICA - KRUGERSDORP WEST In respect of certain: ERF 1319 WEST KRUGERSDORP TOWNSHIP REGISTRATION DIVISION IQ, PROVINCE OF GAUTENG MEASURING 2825 (TWO THOUSAND EIGHT HUNDRED AND TWENTY FIVE) Square metres HELD BY Deed of Transfer Number T1380/1973 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the REGISTRAR OF DEEDS: SOUTH GAUTENG at JOHANNESBURG within two weeks after the date of the publication of this notice. JOHANNESBURG DEEDS OFFICE 28 Harrison St Marshalltown Johannesburg 2107 Dated at on this day of 2026 PASTOR DANIEL JOHANNES VAN DER WESTHUIZEN duly authorised hereto by the Executive Council of the FULL GOSPEL CHURCH OF GOD IN SOUTHERN AFRICA - KRUGERSDORP WEST Address: Email address: Contact number:

———————ZZ000016

T19755/2008
Odendaal R P

LOST or DESTROYED DEED NOTICE is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer T19755/2008 passed by DEON FREDERIK ODENDAAL IDENTITY NUMBER: 560209 5077 085 UNMARRIED in favour of RACHEL PETRONELLA ODENDAAL IDENTITY NUMBER: 561029 0014 084 UNMARRIED in respect of certain ERF 5382 RIEBEECKSTAD (EXTENSION 1), DISTRICT WELKOM, PROVINCE FREE STATE which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds Free State, Room Number B29, 85 Nelson Mandela Dr, Bloemfontein Central within two weeks from the date of publication of this notice. Dated at Nelspruit this 27 May 2026 Applicant: SWANEPOEL & PARTNERS INC Address: OFFICE 2 and 5, 45 MARLOTH STREET, MBOMBELA E-mail address: aktes1@swanvenn.co.za Tel number: 013-753 2401

———————JD109485

T20392/2009
MAKWASSIE BOEREVERENIGING /PROVINCE OF NORTH WEST
LOST or DESTROYED DEED

NOTICE is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of :- -a certified copy of :DEED OF TRANSFER T20392/2009 -passed by:MAQUASSI HILLS LOCAL MUNICIPALITY -in favour of: MAKWASSIE BOEREVERENIGING -in respect of certain :PORTION 1 OF ERF 650 MAQUASSI TOWNSHIP, REGISTRATION DIVISION HO, PROVINCE OF NORTH WEST IN EXTENT: 4105 SQUARE METRES which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the REGISTRAR OF DEEDS: NORTH GAUTENG at:- PRETORIA DEEDS OFFICE 600 LILIAN NGOYI STREET BEREA PARK PRETORIA 0001 within 2 (two) weeks from the date of the publication of this notice. DATED at KLERKSDORP on 09 JUNE 2026 APPLICANT DANIE SNYDERS ATTORNEYS 55 Buffelsdoorn Rd Wilkoppies Klerksdorp, 2571 018 468 1256 convey.ds@gmail.com

———————TB000857

T23107/2009
JOHANNES MONGALI MPHATLE

FORM JJJ LOST OR DESTROYED DEED Notice is hereby given in terms of Regulation 68 of the Deeds Registration Act, 1937, of the intention to apply for the issue of a certified copy of DEED OF TRANSFER No T23107/2009 passed by1. SEREOLONG REGGEA LECOKO, Identity Number 751010 1965 08 6 and MAIPATO JAFTA LECOKO, Identity Number 680215 6352 08 3, Married in community of property to each other 2. VUSIMUSI DANIEL GUMEDE, Identity Number 731026 5645 08 1 and NONHLANHLA ANGEL GUMEDE, Identity Number 771008 0817 08 0, Married in community of property to each other in favour of JOHANNES MONGALI MPHATLE, Identity Number 720504 5629 08 4, Unmarried in respect of certain ERF 887 KUTLWANONG, DISTRICT ODENDAALSRUS, PROVINCE FREE STATE, which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds: Free State at BLOEMFONTEIN, 85 Nelson Mandela Drive, Bloemfontein Central, Bloemfontein, within two weeks from the date of the publication of this notice. Dated at BELLVILLE this 8th day of JUNE 2026 Applicant: GERRIT MöLLER ATTORNEYS Address: 11B CANAL EDGE FOUR, TYGER WATERFRONT, BELLVILLE e-mail address: gerritmoller @mweb.co.za Contact number:021- 9148575 / 0827723934

———————LV030799

T23260/2009
KGWADI D S
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of DEED OF TRANSFER NO. T23260/2009 passed by MOSES THEMBINKOSI DLEPU (IDENTITY NUMBER:730228 5166 081), MAGGIE THEMBI DLEPU (IDENTITY NUMBER:800820 0509 086), in favour of DIA SIMON KGWADI (IDENTITY NUMBER: 510804 5579 089) in respect of certain ERF 21636 TSAKANE EXT 11 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the REGISTRAR OF DEEDS: South Gauteng at Johannesburg within two weeks from the date of publication of this notice. Dated at this Day of 2026 Applicant: Address: E-mail address: Contact number:

———————MA017246

T26077/2019 KUKUU GM

LOST OR DESTROYED DEED OF TRANSFER Form for issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds: Free State at BLOEMFONTEIN, 85 Nelson Mandela Drive, Bloemfontein Central, Bloemfontein, within two weeks from the date of the publication of this notice. Dated at BELLVILLE this 8th day of JUNE 2026 Applicant: GERRIT MöLLER ATTORNEYS Address: 11B CANAL EDGE FOUR, TYGER WATERFRONT, BELLVILLE e-mail address: gerritmoller @mweb.co.za Contact number:021- 9148575 / 0827723934

———————LV030799

T23260/2009
KGWADI D S
LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of DEED OF TRANSFER NO. T23260/2009 passed by MOSES THEMBINKOSI DLEPU (IDENTITY NUMBER:730228 5166 081), MAGGIE THEMBI DLEPU (IDENTITY NUMBER:800820 0509 086), in favour of DIA SIMON KGWADI (IDENTITY NUMBER: 510804 5579 089) in respect of certain ERF 21636 TSAKANE EXT 11 which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the REGISTRAR OF DEEDS: South Gauteng at Johannesburg within two weeks from the date of publication of this notice. Dated at this Day of 2026 Applicant: Address: E-mail address: Contact number:

———————MA017246

T26077/2019 KUKUU GM

LOST OR DESTROYED DEED OF TRANSFER Form for publication in terms of Regulation 68 of the Deeds Registries Act 47 of 1937 Notice is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer T26077/2019, passed by GARVIN MELUSI KUKUU in favour of: GARVIN MELUSI KUKUU Identity Number 7407165659087 Unmarried In respect of certain: ERF 1016 OBED MTHOMBENI NKOSI EXTENSION 1 TOWNSHIP; REGISTRATION DIVISION I.R., GAUTENG PROVINCE MEASURING 199 (ONE HUNDRED AND NINETY NINE) Square metres HELD BY Deed of Transfer Number T26077/2019 Which has been lost or destroyed. All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds PRETORIA at Deeds Office Information Section, Merino Building, 140 Pretorius Street, Pretoria Central, Pretoria, 0002, within two (2) weeks from the date of the publication of this notice. THIS DONE AND SIGNED AT ON THIS DAY OF2026. GARVIN MELUSI KUKUU Care of CAREL BASSON INCORPORATED 11 HELSTON STREET NEW REDRUTH ALBERTON 1450 TEL: 011 450 3734 FAX: 086 747 8485 REF: ANSONE / K106

———————KP135227

T27554/1956
MATHYS JOHANNES DE VOS

AANSOEK OM VERLORE AKTE Kennisgewing geskied hiermee ingevolge regulasie 68 van die Registrasie van Aktes wet, 1937, van die voorneme om aansoek te doen vir die uitreiking van `n gesertifiseerde afskrif van Akte van Transport T27554/1956 geregistreer verby gegaan BAREND PETRUS HAVENGA (gebore op die 18de Februarie 1925) (`n Lid van die Blanke Groep soos omskryf in artikel 2 van Wet No. 41 van 1950) ten gunste van MATHYS JOHANNES DE VOS (gebore op die 19de September 1926) (`n Lid van die Blanke Groep soos omskryf in Artikel 2 van Wet No. 41 van 1950) ten opsigte van sekere Resterende Gedeelte van Lot Nr. 646, geleë aan Generaal de Wetstraat en Danie Theronstraat, in die dorp PRETORIA NOORD, distrik PRETORIA wat verlore of vernietig is. Alle persone wat beswaar teen die uitreiking van sodanige afskrif het, word hiermee versoek om binne twee weke na die datum van publikasie van hierdie kennisgewing skriftelik by die Registrateur van Aktes Noord Gauteng te Pretoria in te dien. Gedateer te PRETORIA op 02 JUNE 2026 MARIUS JOHANNES DE VOS Louwrens Coetzer en Vennote Athlonelaan 15 DALVIEW BRAKPAN 1541 Kontaknommer: 0117402326 E-pos adres: sonja @louwrenscoetzer.co.za

———————LV030758

HAMMOND POLE ATTORNEYS

T31250/2020
Mashamba J & N R

LOST OR DESTROYED DEED JUDAS MASHAMBA and NAMADZAVHO REBECCA MASHAMBA (T31250/2020) Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer T31250/2020 passed by TRANS-ACHT PROPRIETARY LIMITED Registration Number 2000 /019093/07 in favour of JUDAS MASHAMBA Identity Number

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NOTICE OF AN ENVIRONMENTAL AUTHORISATION APPLICATION (Ref 002/26-27/E0011) FOR THE STORAGE OF WATER IN BALANCING DAMS AT BINNEPLAAS BOERDERY IN COOPERVILLE AH, MIDVAAL MUNICIPALITY, GAUTENG PROVINCE

Applicant: Binneplaas Boerdery

Project: Environmental Authorisation Application for the Storage of Water in balancing Dams at Binneplaas Boerdery in Cooperville AH, Midvaal Municipality, Gauteng Province.

Location: Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province.

Notice hereby given that Binneplaas Boerdery is applying for an Environmental Authorisation for the Storage of Water in balancing Dams for the use in hydropower and irrigation activities.

Environmental Authorizations Required

Binneplaas Boerdery proposes to construct three balancing dams at their site located in Cooperville AH, Midvaal Municipality, Gauteng Province. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles. The proposed development triggers the following listed activities:

GNR 983 - Listed activity	Description of listed activity
Activity 1	"the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
Activity 27	"The clearance of an area of 1 hectares 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."

Therefore, Binneplaas Boerdery must obtain an Environmental Authorization from the Gauteng Department of Environment (GDENv). Zantow Environmental Consulting Services (Zantow Environmental) was appointed by Binneplaas Boerdery as an independent EAP to facilitate an EA application process.

Date(s) of this notice: 10th June 2026

This notice is intended to inform stakeholders who have or may wish to register as an Interested and/or Affected Party (I&AP) in order to partake in the EA application process. To obtain further information, raise any issues or concerns, or submit any comments please contact Zantow Environmental at the contact details below within 30 days of this notice.

Karien Zantow
Cell: 083 384 3641
Email: info@zantow.co.za
PO Box: 3858, Vanderbijlpark, 1900

Please note that the report in support of the EA application will be available for review from the 10th of June 2026 up to the 11th of July 2026 of this notice for a 30 day period at the following locations:

Website: www.zantow.co.za
E-mail: info@zantow.co.za (on request)

Appendix E-4

Communication to and from IAPs

Mbali Zwane

From: Karien Zantow
Sent: Wednesday, 10 June 2026 08:11
To: Bongani.Shabangu; Mbali Zwane
Subject: Karien Zantow shared the folder "Binneplaas Boerdery NEMA Draft BAR" with you

Karien Zantow invited you to edit a folder

Gaut002/26-27/E0011

BA APPLICATION: APPLICATION FOR AN ENVIRONMENTAL AUTHORIZATION FOR THE PROPOSED DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND HYDROPOWER-ASSISTED IRRIGATION SYSTEM ON AGRICULTURAL LAND ADJACENT TO THE SUIKERBOSRAND RIVER

Good Morning

Please find attached the Draft BAR for your comment

Kind Regards
Karien

Binneplaas Boerdery NEMA Draft BAR

This invite will only work for you and people with existing access.

Open Share

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Mbali Zwane

From: Mbali Zwane
Sent: Wednesday, 10 June 2026 08:24
To: 'maleper@dws.gov.za'; 'Mthembusi@dws.gov.za'; eiaadmin@dffe.gov.za
Cc: Karien Zantow
Subject: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province
Attachments: Binneplaas Boerdery Draft Basic Assessment Report_Annexures Attached.pdf

Dear Interested and Affected Parties,

Zantow Environmental Consulting Services has been appointed by Binneplaas Boedery to facilitate the application for an Environmental Authorisation for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land Adjacent to the Suikerbosrand River at Binneplaas Boerdery Located in Cooperville AH, Gauteng Province (Ref Nr: 002/26-27/E0011).

Please see attached the Draft Basic Assessment Report for **Comments**. If you have any comments or concerns, please submit them by the **13th of July 2026**.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
SACNASP Reg Nr 170448
T: 081 375 4647
E: mbali@zantow.co.za
www.zantow.co.za

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Mbali Zwane

From: Mbali Zwane
Sent: Wednesday, 10 June 2026 08:24
To: 'jakov@midvaal.gov.za'; 'p13swa@gmail.com'; 'lillian.molakeng@yahoo.com'; 'Dakalop@midvaal.gov.za'
Cc: Karien Zantow
Subject: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province
Attachments: Binneplaas Boerdery Draft Basic Assessment Report_Annexures Attached.pdf

Tracking:

Recipient	Read
'jakov@midvaal.gov.za'	
'p13swa@gmail.com'	
'lillian.molakeng@yahoo.com'	
'Dakalop@midvaal.gov.za'	
Karien Zantow	Read: 2026/06/10 08:32

Dear Interested and Affected Parties,

Zantow Environmental Consulting Services has been appointed by Binneplaas Boedery to facilitate the application for an Environmental Authorisation for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land Adjacent to the Suikerbosrand River at Binneplaas Boerdery Located in Cooperville AH, Gauteng Province (Ref Nr: 002/26-27/E0011).

Please see attached the Draft Basic Assessment Report for **Comments**. If you have any comments or concerns, please submit them by the **13th of July 2026**.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
SACNASP Reg Nr 170448
T: 081 375 4647
E: mbali@zantow.co.za
www.zantow.co.za

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Mbali Zwane

From: Mbali Zwane
Sent: Friday, 26 June 2026 08:02
To: 'jakov@midvaal.gov.za'; 'p13swa@gmail.com'; 'lillian.molakeng@yahoo.com'; 'Dakalop@midvaal.gov.za'
Cc: Karien Zantow
Subject: RE: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province
Attachments: Binneplaas Boerdery Draft Basic Assessment Report_Annexures Attached.pdf

Dear Interested and Affected Parties,

This email serves as a reminder that Binneplaas Boedery's Public Participation Process will close on **13 July 2026**.

For your ease of reference, the draft Basic Assessment Report (BAR) is attached to this email.

Should you wish to submit any comments or queries, please ensure that they are received before the closing date.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
SACNASP Reg Nr 170448
T: 081 375 4647
E: mbali@zantow.co.za
www.zantow.co.za

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give Zantow Environmental Consulting Services CC consent to process the personal information contained in this email which will be done in accordance with the Protection of Personal Information Act (4 of 2013) (POPI) and the Privacy Policy of Zantow Environmental Consulting Services CC .This disclaimer applies to all electronic communications that are sent or received through our IT systems including our original e-mail, any attachments and all subsequent e-mails or attachments that Zantow Environmental Consulting Services CC ' user may send. This disclaimer shall be governed by the law of South Africa. Any dispute arising from or in connection with this disclaimer shall be resolved at Pretoria in accordance with the Rules of the Arbitration Foundation of Southern Africa by an independent appointed arbitrator.

From: Mbali Zwane
Sent: Wednesday, 10 June 2026 08:24
To: 'jakov@midvaal.gov.za' <jakov@midvaal.gov.za>; 'p13swa@gmail.com' <p13swa@gmail.com>; 'lillian.molakeng@yahoo.com' <lillian.molakeng@yahoo.com>; 'Dakalop@midvaal.gov.za' <Dakalop@midvaal.gov.za>
Cc: Karien Zantow <Karien@zantow.co.za>
Subject: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

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Please see attached the Draft Basic Assessment Report for **Comments**. If you have any comments or concerns, please submit them by the **13th of July 2026**.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
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Mbali Zwane

From: Karien Zantow
Sent: Monday, 06 July 2026 09:23
To: jakov@midvaal.gov.za
Cc: Mbali Zwane
Subject: RE: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province
Attachments: Binneplaas Boerdery Written Notice.pdf; BID_Final.pdf

Dear Jako

As discussed telephonically, please provide the contact details of the relevant parties we should also approach.
Your assistance and guidance is appreciated

Kind Regards
Karien

Karien Zantow
Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871
T: 083 3843 641 F: 016 932 4976
E: karien@zantow.co.za
www.zantow.co.za

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From: Mbali Zwane <Mbali@zantow.co.za>
Sent: Friday, 03 July 2026 10:40
To: jakov@midvaal.gov.za
Cc: Karien Zantow <Karien@zantow.co.za>
Subject: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

Dear Jako,

I trust you are doing well.

I am writing with reference to the call received on Friday, 26 June 2026, regarding the Binneplaas Boerdery Basic Assessment Report, which is currently available for public comment until 10 July 2026.

Karien Zantow attempted to return your call but has unfortunately been unable to reach you. We would appreciate the opportunity to meet with you via Microsoft Teams early next week to discuss the project and address any comments or concerns the Municipality may have regarding the report.

Please let us know your availability, and we will gladly arrange a meeting at a time that is convenient for you.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
SACNASP Reg Nr 170448
T: 081 375 4647
E: mbali@zantow.co.za
www.zantow.co.za

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Mbali Zwane

From: Karien Zantow
Sent: Thursday, 09 July 2026 13:27
To: Mbali Zwane
Subject: Fwd: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province
Attachments: image001.jpg; Binneplaas Boerdery Written Notice.pdf; BID_Final.pdf; Portion 9 of the Farm Uitvlught 434 IR.pdf

Sent from my iPhone

Begin forwarded message:

> **From:** Mashudu Nematswerani <MashuduN@midvaal.gov.za>
> **Date:** 09 July 2026 at 12:21:51 SAST
> **To:** Karien Zantow <Karien@zantow.co.za>
> **Cc:** Kameshree Reddy <KameshreeR@midvaal.gov.za>, Fusi Puthini <FusiP@midvaal.gov.za>, Angeline Ramahlo <AngelineR@midvaal.gov.za>, Shiluva Ntsanwisi <shiluvan@midvaal.gov.za>
> **Subject: RE: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province**
>
> Good day
>
> Please find attached our response.
>
> Kind regards,
> Mashudu Nematswerani
> 0163607550
> mashudun@midvaal.gov.za

From: Kameshree Reddy <KameshreeR@midvaal.gov.za>
Sent: Tuesday, 07 July 2026 10:09
To: Mashudu Nematswerani <MashuduN@midvaal.gov.za>
Cc: Fusi Puthini <FusiP@midvaal.gov.za>; Angeline Ramahlo <AngelineR@midvaal.gov.za>
Subject: FW: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

Dear Mashudu,

New inquiry allocated to you

07/07/2026	3647	EMAIL	UITVLUGHT 434IR

From: Fusi Puthini <FusiP@midvaal.gov.za>
Sent: Tuesday, 07 July 2026 10:03
To: Kameshree Reddy <KameshreeR@midvaal.gov.za>
Subject: FW: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

Good day,

Kindly find new inquiry.

Regards

From: Jako Verster <JakoV@midvaal.gov.za>
Sent: Tuesday, 07 July 2026 09:00
To: Kagiso Rasepae <KagisoR@midvaal.gov.za>; Eugene van der Merwe <EugeneV@midvaal.gov.za>; Thabo Mabula <thaboma@midvaal.gov.za>; Samukelo Simamane <SamukeloS@midvaal.gov.za>; Trivania Sukdev <TrivaniaR@midvaal.gov.za>; Anthony Bruno <AnthonyB@midvaal.gov.za>; Ratidzai Madimutsa <ratidzaim@midvaal.gov.za>; Fusi Puthini <FusiP@midvaal.gov.za>; Dakalo Phaswa <DakaloP@midvaal.gov.za>; Precious Mafune <preciousma@midvaal.gov.za>; Ayanda Zulu <AyandaZ@midvaal.gov.za>
Subject: FW: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

From: Karien Zantow <Karien@zantow.co.za>
Sent: Monday, 06 July 2026 09:23
To: Jako Verster <JakoV@midvaal.gov.za>
Cc: Mbali Zwane <Mbali@zantow.co.za>
Subject: RE: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

You don't often get email from karien@zantow.co.za. Learn why this is important

Dear Jako

As discussed telephonically, please provide the contact details of the relevant parties we should also approach.
Your assistance and guidance is appreciated

Kind Regards
Karien

Karien Zantow
Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871
T: 083 3843 641 F: 016 932 4976
E: karien@zantow.co.za
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Sent: Friday, 03 July 2026 10:40
To: jakov@midvaal.gov.za
Cc: Karien Zantow <Karien@zantow.co.za>
Subject: Draft Basic Assessment Report for Binneplaas Boedery located in Portion 9 of Erf 434, Uitvlugt Farm, Cooperville AH, Gauteng Province

Dear Jako,

I trust you are doing well.

I am writing with reference to the call received on Friday, 26 June 2026, regarding the Binneplaas Boerdery Basic Assessment Report, which is currently available for public comment until 10 July 2026.

Karien Zantow attempted to return your call but has unfortunately been unable to reach you. We would appreciate the opportunity to meet with you via Microsoft Teams early next week to discuss the project and address any comments or concerns the Municipality may have regarding the report.

Please let us know your availability, and we will gladly arrange a meeting at a time that is convenient for you.

Kind Regards
Mbali

Mbali Zwane
Environmental Consultant
SACNASP Reg Nr 170448
T: 081 375 4647
E: mbali@zantow.co.za
www.zantow.co.za

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RAND WATER

Wayleave Management System

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Wayleave Number	Progress	Wayleave Type	Work Description	Submitted Date	Location Description
RW2526-4783	In SUBMITTED	Default application	Draft Basic Assessment Report in Support of the Application for an Environmental Authorization for ...	2026/06/10	The property is located on Portion 9 of Erf 434, Uitvlugt Farm in Cooperville AH. The property is z...

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Mbali Zwane

From: no-reply@randwater.co.za
Sent: Wednesday, 10 June 2026 08:54
To: Karien Zantow
Cc: frikroets@vodamail.co.za
Subject: CONFIRMATION: Incoming Application RW2526-4783 Received

Message from WayleaveCentral

CONFIRMATION: INCOMING APPLICATION RW2526-4783 RECEIVED

Dear Karien Zantow,

This email serves as confirmation of receipt of your application submission on .

Your reference number for this application is: **RW2526-4783**

Wayleave details for rw2526-4783

Wayleave Number	RW2526-4783
Wayleave Type	Default application
Work Description	Draft Basic Assessment Report in Support of the Application for an Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land Adjacent to the Suikerbosrand River at Binneplaas Boerdery Located in Cooperville AH, Gauteng Province (Ref Nr: 002/26-27/E0011).
Location Description	The property is located on Portion 9 of Erf 434, Uitvlugt Farm in Cooperville AH. The property is zoned for agricultural use and is currently being utilized as an agricultural holding.
Estimated Start Date	2026/06/10
Estimated End Date	2026/07/13
Status	In_UPDATED
Application Phase	Initial-Review
Client/Service Owner	Private
Client/Service Owner Contact	Roets, Frik
Applicant	Zantow Environmental Consulting Services
Applicant Contact	Zantow, Karien
Map Link	Show Map

Please login to the Rand Water Wayleave System to view more details regarding this Application, or select the following link to go there now.

We as Rand Water are committed to offering you an excellent service via our online Wayleave application and processing website.

Please do not reply to this system generated email.

For any queries, suggestion and/or comments regarding this application, please forward it to the Rand Water Support Centre at: wayleave@randwater.co.za

Rand Water Wayleave System web URL: https://wayleave.randwater.co.za

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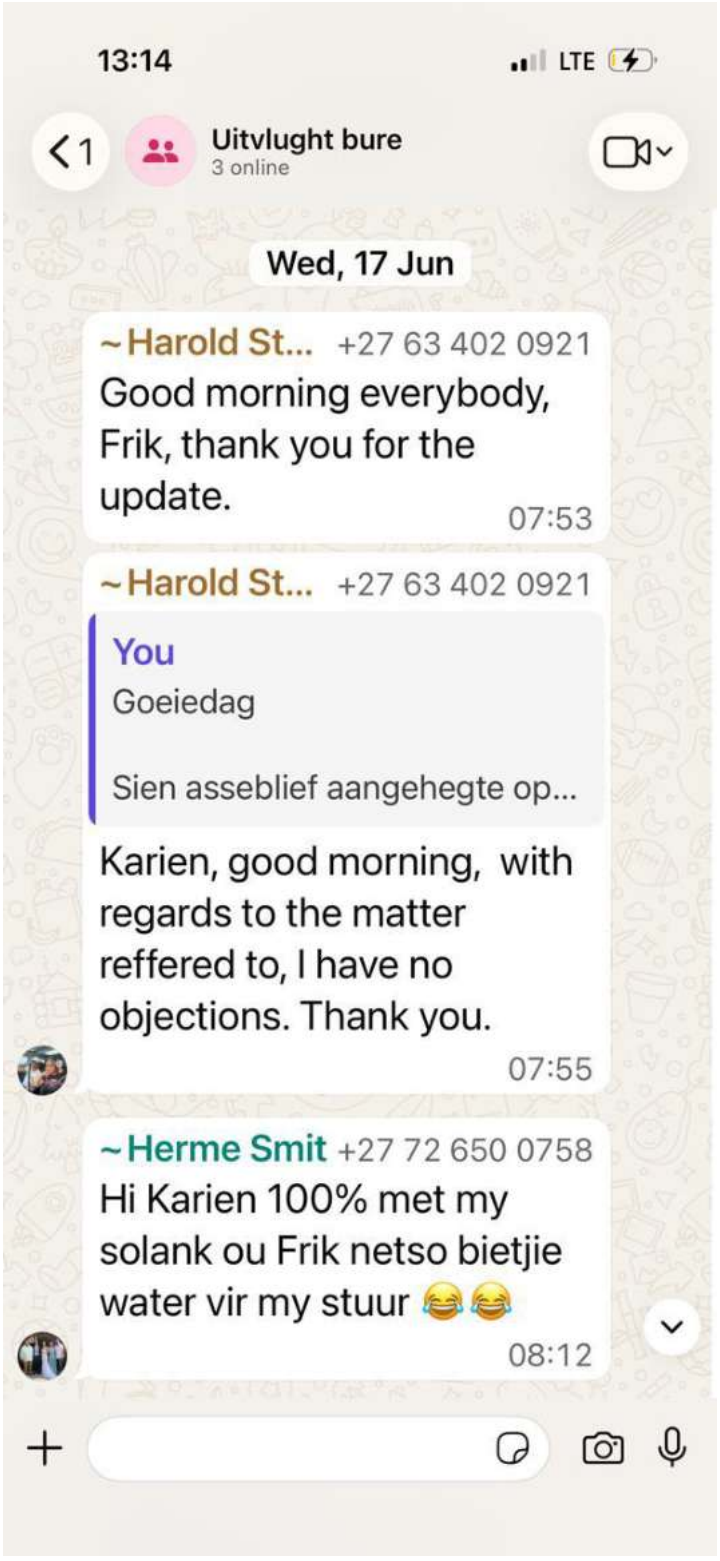
13:14
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1
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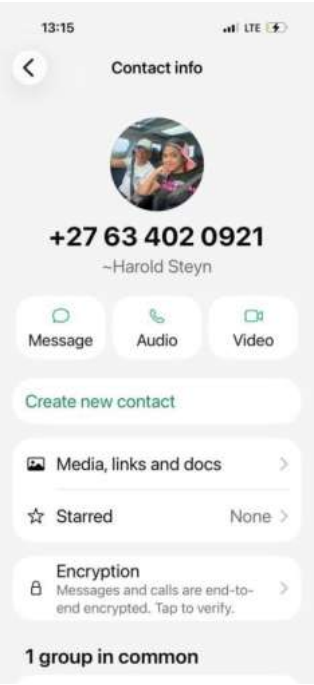
3 online
Wed, 17 Jun
~Harold St... +27 63 402 0921
Good morning everybody, Frik, thank you for the update.
07:53
~Harold St... +27 63 402 0921
You
Goeiedag
Sien asseblief aangehegte op...
Karien, good morning, with regards to the matter reffered to, I have no objections. Thank you.
07:55
~Herme Smit +27 72 650 0758
Hi Karien 100% met my solank ou Frik netso bietjie water vir my stuur 😂😂
08:12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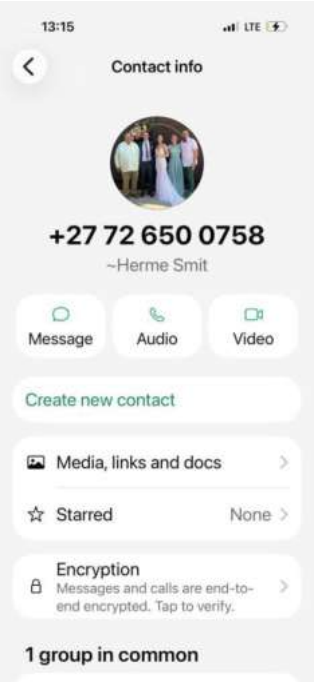
Contact info
+27 63 402 0921
~Harold Steyn
Message
Audio
Video
Create new contact
Media, links and docs
Starred
None
Encryption
Messages and calls are end-to-end encrypted. Tap to verify.
1 group in common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Contact info
+27 72 650 0758
~Herme Smit
Message
Audio
Video
Create new contact
Media, links and docs
Starred
None
Encryption
Messages and calls are end-to-end encrypted. Tap to verify.
1 group in common

Appendix E-5

Meeting Minutes

Appendix E-6

Comments and Responses Report

DRAFT BASIC ASSESSMENT REPORT IN SUPPORT OF AN APPLICATION FOR AN ENVIRONMENTAL AUTHORIZATION FOR THE PROPOSED DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND HYDROPOWER-ASSISTED IRRIGATION SYSTEM ON AGRICULTURAL LAND ADJACENT TO THE SUIKERBOSRAND RIVER

Comments and Response Report

Party/Person	Comment Raised	Method	Date of Comment	Response
Comments from Adjacent I&AP's				
Harold Steyn	With regards to the matter referred to, I have no Objections.	WhatsApp text message	17 June 2026	The comments are noted.
Herme Smit	100% with me.			
Department of Forestry Fisheries and the Environment				
None Received				
Gauteng Department of Environment				
Hellen Sithole	**Description of the site/property/route and development:** The proposed development of cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system on Portion 9 of Erf 434, Farm Uitvlugt, Midvaal Local Municipality. 1.1 The site measures approximately 221 hectares in extent 1.2 The development footprint measures 3.2 hectares in extent. 1.3 The combined design capacity of the off-channel balancing dam system is approximately 107 976 m³. 1.4 The total water surface area at full supply level is approximately 27 618m², equivalent to approximately 2.76 hectares.	Email	09 July 2026	The description of the site and development are noted and accurately captured.

<table>
<tr><th>Party/Person</th><th>Comment Raised</th><th>Method</th><th>Date of Comment</th><th>Response</th></tr>
<tr><td></td><td>Applicable legislation and policies:

The report has considered all applicable legislations and policies for the proposed development of cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system on Portion 9 of Erf 434, Farm Uitvlugt, Midvaal Local Municipality. The Gauteng Provincial Environmental Management Framework, 2021 identifies the proposed site as Environmental Management Zone 4 which is dominated by agricultural uses outside the urban development zone.</td><td></td><td></td><td>The comment is noted. The applicable legislation and policies have been correctly identified and accurately captured.</td></tr>
<tr><td></td><td>Description of the receiving environment:

The proposed development site is environmentally sensitive according to Gauteng conservation Plan (C-Plan Version 4.0) with Critical Biodiversity Area 1 (CBA 1), Critical Biodiversity Area 2(CBA 2), MARXAN Mean Summed Solution, MARXAN Summed Best Solution, CBA Corridor Network and Wetland. The site is surrounded by Agricultural Land and is vacant.</td><td></td><td></td><td>The comment is noted. The description of the receiving environment has been accurately captured.</td></tr>
<tr><td></td><td>Listed activities applied for:

The following listed activities have been applied for:
<table><tr><th>Activity No and description</th><th>Description of the development related to the listed activity</th></tr><tr><td>Listing Notice 1 Activity 1 The development of facilities or infrastructure for the generation of electricity from a renewable resource where— (ii) the output is 10 megawatts or less, but the total extent of the facility covers an area in excess of 1 hectare.</td><td>The development related to this listed activity must be outline in the final Basic Assessment Report.</td></tr><tr><td>Listing Notice 1 Activity 13.
The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs,</td><td>The development related to this activity must be outline in the final Basic Assessment Report.</td></tr></table></td><td></td><td></td><td>The description of the proposed development associated with the listed activity has been included in Subsection 2: Applicable Legislation, Policies and/or Guidelines of Section A: Activity Information in the Final Basic Assessment Report (BAR) has been amended to include Listing Notice 3, Activity 12.</td></tr>
</table>

Party/Person	Comment Raised	Method	Date of Comment	Response
	with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.			
	Listing Notice 1 Activity 27 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.			The development related to this activity must be outline in the final Basic Assessment Report.
	Specialist studies: The attached Terrestrial Biodiversity and Wetland Impact Assessment, Palaeontological Impact Assessment, Agricultural Impact Assessment and Civil Aviation Compliance Statement is noted; however, Heritage Impact Assessment must be undertaken by the suitable qualified specialist and form part of the final Basic Assessment.			The comment requesting an Archaeological and Heritage specialist study has been considered. The National Web-Based Environmental Screening Tool identifies the proposed development footprint as having **low sensitivity for the Archaeological and Cultural Heritage Theme**. The EAP has undertaken a site sensitivity verification to confirm whether the Screening Tool classification accurately reflects the conditions within the proposed development footprint. Refer to **Annexure G5.** The verification comprised a desktop review of the Screening Tool results, available SAHRIS information, historical information and aerial imagery, together with an inspection of the proposed development footprint and surrounding area. The existing land use, degree of historical agricultural disturbance, project layout and the potential presence of archaeological or cultural heritage resources were considered. Photographic evidence of the site conditions was also recorded. No archaeological sites, graves, burial grounds, historical structures or other heritage resources of significance were identified within the proposed

Party/Person	Comment Raised	Method	Date of Comment	Response
				development footprint. The site inspection and desktop review therefore confirmed the Screening Tool's low-sensitivity classification. It is important to distinguish the **site sensitivity verification prepared by the EAP** from a formal specialist Heritage Impact Assessment. The EAP is not presenting the verification as a specialist archaeological assessment or claiming specialist archaeological expertise. Rather, the verification records the factual basis upon which the low sensitivity identified by the Screening Tool has been confirmed and provides the competent authority with sufficient information to determine whether further specialist input is reasonably required. No gazetted environmental protocol has been identified that automatically requires a specialist Archaeological and Cultural Heritage Compliance Statement for a site confirmed as having **low sensitivity**. The protocols contained in GN 1150 of 30 October 2020 apply exclusively to the environmental themes identified within their scope, namely terrestrial animal and terrestrial plant species, and cannot be applied directly to the archaeological and cultural heritage theme. The National Heritage Resources Act, 1999 does not require a full Heritage Impact Assessment merely because a development exceeds a particular footprint threshold. Section 38 requires the relevant heritage resources authority to be notified. Following such notification, the heritage authority may require an impact assessment where it has reason to believe that heritage resources may be affected, or it may confirm that section 38 does not apply further. Where a specialist impact assessment is required, it must be prepared by a person approved by the heritage authority with relevant qualifications, experience and professional standing.

Party/Person	Comment Raised	Method	Date of Comment	Response
				In this case, the environmental impacts are being assessed through the NEMA Basic Assessment process. Section 38(8) of the National Heritage Resources Act provides for heritage considerations to be incorporated into an assessment undertaken under other environmental legislation, provided that the competent authority ensures that the evaluation meets the requirements of the relevant heritage resources authority and that its comments and recommendations are considered before a decision is made. The EAP therefore submits that a separate specialist archaeological study is not warranted on the available evidence because: • the Screening Tool identifies the development footprint as having low archaeological and cultural heritage sensitivity; • the EAP's desktop review and site inspection confirmed the low-sensitivity classification; • the footprint is located within historically cultivated and disturbed agricultural land; • no archaeological resources, graves, burial grounds, historical structures or other heritage features were identified within the assessed footprint; • the nearest known formally recognised heritage resources are situated approximately 10 km or more from the proposed development and will not be directly or indirectly affected; and • the potential residual risk associated with previously unidentified subsurface resources can be adequately managed through a formal Chance Finds Procedure. The site sensitivity verification, supporting photographs, desktop information and heritage-resource location map have therefore been included in the Final BAR for consideration by the competent authority. The EMPr further requires that construction remain within the approved footprint and that all work cease immediately should any

Party/Person	Comment Raised	Method	Date of Comment	Response
				previously unidentified archaeological material, historical features, graves or human remains be encountered. A suitably qualified heritage specialist and the relevant heritage resources authority must then be notified, and work may only resume once written clearance has been obtained. On this basis, it is respectfully submitted that the information provided is proportionate to the confirmed low sensitivity of the development footprint and is sufficient to demonstrate that the proposed activity is unlikely to result in a significant impact on archaeological or cultural heritage resources. A full specialist Heritage Impact Assessment should only be required should the relevant heritage resources authority, after reviewing the project information, identify a reasonable basis for concluding that heritage resources may be affected. Refer to **Annexure I2** of the Final Bar for the Site Sensitivity Assessment Report.
	Services required: The services are not required as the project is for storage of water, irrigation and hydropower.			The services required for the proposed development have been correctly captured. As a result of the nature of the proposed development, no municipal services will be required.
	Impacts Identification, Assessment and Mitigation: The assessment of impacts included in the draft report indicates that the impacts rating after mitigation is low to medium; however, it must be included in the final Basic Assessment.			The impact ratings after the mitigation measures are included in **Section E** of the Final Basic Assessment Report.
	Assessment of alternatives: The Report outline the assessment of alternatives which include type of activity alternative, and it must form part of the final Basic Assessment.			An assessment of alternatives is included in **Section D** and **Section E** of the Final Basic Assessment Report.
	Need and desirability of the development.			The Need and desirability of the development is included in **Sub-section 9** of **Section E** of the Final Basic Assessment Report.

Party/Person	Comment Raised	Method	Date of Comment	Response
	The need and desirability of the development outlined in the report is noted and it must form part of the final report.			
	Maps, layout plans, services route positioning: The final report must have an a A3 layout plan, and it must be overlaid on sensitivity map indicating areas of low to high sensitivity. The layout plan as well as a locality map must be in colour and with a visible legend.			The final report includes the A3 layout map indicating the areas of high and low sensitivities under **Appendix C**.
	Public Participation Process: The Public Participation Process is not attached on the report, therefore; Public Participation Process must be undertaken according to the minimum requirements of EIA Regulation 2014 and form part of the final Basic Assessment report and thereafter the issues raised by the registered interested and affected parties must be addressed in the final Basic Assessment report.			The Public Participation Process was undertaken from the 9th of June 2026 to the 10th of July 2026 in accordance with the requirements of the 2014 EIA Regulations. The Public Participation Process is outlined in **Section C** and proof thereof is contained in **Appendix E** of the Final Basic Assessment Report.

<table>
<tr><th>Party/Person</th><th>Comment Raised</th><th>Method</th><th>Date of Comment</th><th>Response</th></tr>
<tr>
<td></td>
<td>Other aspects to be considered:

The Application form and Basic Assessment Report must be amended to include activity 12 of Listing Notice 3 of EIA Regulation 2014.</td>
<td></td>
<td></td>
<td>The Application form (Appendix J) and Basic Assessment Report have been amended to include Activity 12 of Listing Notice 3

<table>
<tr><th>Activity No and description</th><th>Description of the development related to the listed activity</th></tr>
<tr><td>Activity 12 of Listing Notice 3:

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.

C. Gauteng
i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity</td><td>The clearance of 3.2 hectares of land for the construction of three cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system in a Critical Biodiversity Area 1 and 2 area and a ESA 1 site.</td></tr>
</table>
</td>
</tr>
</table>

Party/Person	Comment Raised	Method	Date of Comment	Response
				Assessment 2004; ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.
	Comments from Midvaal Local Municipality Section of Environmental Resource Management must be sourced and form part of the final Basic Assessment Report.			Comments from Midvaal Local Municipality have been received and included on the final Basic Assessment Report. (Refer to **Annexure E7**)

Party/Person	Comment Raised	Method	Date of Comment	Response
	Environmental Management Programme (EMPr): The attached EMPr is noted; however, it must be included in the final report and must be practical, site specific and easily enforceable. An EMPr is a binding document and all the conditions in it should be enforceable, it is therefore important that words that do not emphasise enforcement must be avoided.			The comment is noted. The Environmental Management Programme has been included as **Appendix H to the Final Basic Assessment Report** and has been reviewed and updated to ensure that the prescribed management measures are practical, site-specific and enforceable. The EMPr has been aligned with the proposed cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system. It includes specific requirements relating to: • demarcation of the approved development footprint and environmental no-go areas; • protection of the Suikerbosrand River, watercourses and identified biodiversity sensitivities; • erosion, sediment and stormwater management; • management of excavated material, stockpiles and construction waste; • prevention and management of spills and pollution incidents; • dust, noise and construction-traffic controls; • rehabilitation of disturbed areas; • implementation of the archaeological and heritage Chance Finds Procedure; • environmental induction, inspections, monitoring and recordkeeping; and • responsibilities of the applicant, contractors and Environmental Control Officer.
Comments from Midvaal Local Municipality				
Mashudu Nematswerani Katlego Mokwena	**Project Location:** The subject property is located on Portion 9 of the Farm Uitvlucht 434-IR..	Email	09 July 2026 & 10 July 2026	The Project Location is noted and has been accurately documented.
	Zoning of the property as per Midvaal Land Use Scheme, 2023: The subject property is zoned “Agriculture” for Agricultural building, agricultural uses, commercial farm, conservation areas, cultivation			The Zoning of the property is noted and has been accurately documented.

Party/Person	Comment Raised	Method	Date of Comment	Response
	shed, dwelling house, farm stall, greenhouse, government purposes, municipal use, nature reserve, prayer room, street and subsistence farming.			
	Midvaal Spatial Development Framework 2025-2026: The subject property falls outside the demarcated Urban Development Boundary, and the area is indicted as “farms”.			The property falls outside of the Urban Development Boundary in terms of the Midvaal Spatial Development Framework 2025-2026.
	Dolomite: The property is not affected by dolomite.			The comment is noted.
	Land Use Section: The proposed development can be considered and accommodated as an ancillary use to the farming activities on the property for the purpose of private use only.			The comment is noted. The proposed development will support the farming activities on the property and will generate electricity solely for private use.
	Fully detailed building plans must be submitted for all proposed uses and structures compiling with all SABS standards.			The Dam Design by PG Consulting Engineers, who is registered engineers, are included in **Annexure A** of the Final BAR. The comment is noted. Detailed engineering drawings, designs, specifications and supporting calculations for the proposed off-channel balancing dams and associated infrastructure have been prepared by a suitably qualified professional engineer. Before construction commences, the engineering design package will be submitted to the Midvaal Local Municipality’s Building Control and, where applicable, Engineering Services sections for review and approval in terms of the National Building Regulations and Building Standards Act, 1977, the applicable National Building Regulations, relevant SANS standards and municipal requirements.

Party/Person	Comment Raised	Method	Date of Comment	Response
				The applicant will obtain written confirmation from the Municipality regarding the specific approval process applicable to the engineered dam structures. Where the Municipality determines that conventional building-plan approval is required, no construction of the relevant structures will commence until the plans have been approved. Where a different civil-engineering approval or endorsement process applies, the applicant will comply with that process before construction. Any associated buildings or structures, including pump houses, equipment enclosures, retaining structures or other structures falling within the municipal building-control framework, will similarly be submitted for approval where required. The final approved engineering plans will be retained on site and construction must be undertaken under the supervision of the appointed professional engineer and in accordance with all applicable municipal approvals.

Appendix E-7

Comments from I&APs on Basic Assessment (BA) Report

GAUTENG PROVINCE
ENVIRONMENT
REPUBLIC OF SOUTH AFRICA

Reference: **Gaut 002/26-27/E0011**
Enquiries: Hellen Sithole
Telephone: 076 662 6782
E-mail: Hellen.Sithole@gauteng.gov.za

Zantow Environmental Consulting Services
P. O. Box 3858
Vanderbijlpark
1900

Email: karien@zantow.co.za

Dear Karien Zantow,

COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT: THE PROPOSED DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND HYDROPOWER-ASSISTED IRRIGATION SYSTEM ON PORTION 9 OF ERF 434, FARM UITVLUGT, MIDVAAL LOCAL MUNICIPALITY

Regarding the above-mentioned draft basic assessment report received by the Department on 10 June 2026, here with receive the comments from the Department.

Description of the site/property/route and development

The proposed development of cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system on Portion 9 of Erf 434, Farm Uitvlugt, Midvaal Local Municipality.

1.1 The site measures approximately 221 hectares in extent
1.2 The development footprint measures 3.2 hectares in extent.
1.3 The combined design capacity of the off-channel balancing dam system is approximately 107 976 m³.
1.4 The total water surface area at full supply level is approximately 27 618m², equivalent to approximately 2.76 hectares.

2. Applicable legislation and policies

The report has considered all applicable legislations and policies for the proposed development of cascading off-channel balancing dams, river abstraction infrastructure and hydropower-assisted irrigation system on Portion 9 of Erf 434, Farm Uitvlugt, Midvaal Local Municipality. The Gauteng Provincial Environmental Management Framework, 2021 identifies the proposed site as Environmental Management Zone 4 which is dominated by agricultural uses outside the urban development zone.

3 Description of the receiving environment

The proposed development site is environmentally sensitive according to Gauteng conservation Plan (C-Plan Version 4.0) with Critical Biodiversity Area 1 (CBA 1), Critical Biodiversity Area 2(CBA 2), MARXAN Mean Summed Solution, MARXAN Summed Best Solution, CBA Corridor Network and Wetland. The site is surrounded by Agricultural Land and is vacant.

4 Listed activities applied for

The following listed activities have been applied for:

Activity No and description	Description of the development related to the listed activity
Listing Notice 1 Activity 1 The development of facilities or infrastructure for the generation of electricity from a renewable resource where— (ii) the output is 10 megawatts or less, but the total extent of the facility covers an area in excess of 1 hectare.	*The development related to this listed activity must be outline in the final Basic Assessment Report.*
Listing Notice 1 Activity 13. The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.	*The development related to this activity must be outline in the final Basic Assessment Report.*
Listing Notice 1 Activity 27 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.	*The development related to this activity must be outline in the final Basic Assessment Report.*

5 Specialist studies

The attached Terrestrial Biodiversity and Wetland Impact Assessment, Palaeontological Impact Assessment, Agricultural Impact Assessment and Civil Aviation Compliance Statement is noted; however, Heritage Impact Assessment must be undertaken by the suitable qualified specialist and form part of the final Basic Assessment.

6 Services required.

The services are not required as the project is for storage of water, irrigation and hydropower.

7. Impacts Identification, Assessment and Mitigation

The assessment of impacts included in the draft report indicates that the impacts rating after mitigation is low to medium; however, it must be included in the final Basic Assessment.

8. Assessment of alternatives

The Report outline the assessment of alternatives which include type of activity alternative, and it must form part of the final Basic Assessment.

9. **Need and desirability of the development.**

The need and desirability of the development outlined in the report is noted and it must form part of the final report.

10. **Maps, layout plans, services route positioning**

The final report must have an a A3 layout plan and it must be overlaid on sensitivity map indicating areas of low to high sensitivity. The layout plan as well as a locality map must be in color and with a visible legend.

11. **Public Participation Process**

The Public Participation Process is not attached on the report, therefore; Public Participation Process must be undertaken according to the minimum requirements of EIA Regulation 2014 and form part of the final Basic Assessment report and thereafter the issues raised by the registered interested and affected parties must be addressed in the final Basic Assessment report.

12. **Other aspects to be considered.**

The Application form and Basic Assessment Report must be amended to include activity 12 of Listing Notice 3 of EIA Regulation 2014. Comments from Midvaal Local Municipality Section of Environmental Resource Management must be sourced and form part of the final Basic Assessment Report.

13. **Environmental Management Programme (EMPr)**

The attached EMPr is noted; however, it must be included in the final report and must be practical, site specific and easily enforceable. An EMPr is a binding document and all the conditions in it should be enforceable, it is therefore important that words that do not emphasise enforcement must be avoided.

If you have any queries regarding the contents of this letter, please contact the official of the Department using any of the above indicated contact details.

Yours faithfully,

Ms. Hellen Sithole
Control Environmental Officer Grade B: Impact Management
Date: 09/07/2026

Mr Frik Roets	Binneplaas Boerdery	Email: frikroets@vodamail.co.za
Samukelo Simamane	Midvaal Local Municipality	Email: SamukeloS@midvaal.gov.za

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DEVELOPMENT & PLANNING

Ref: Town Planning Enquiry no: 3647

Zantow Environmental Consulting Services
info@zantow.co.za

Dear Sir/Madam

THE PROPOSED THREE DAMS FOR IRRIGATION AND GENERATION OF ENERGY, AND ASSOCIATED INFRASTRUCTURE IN RESPECT OF PORTION 9 THE FARM UITVLUCHT 434-IR

A request for comments on a draft Environmental Impact Assessment report was received on the 07 July 2026.

The matter was discussed at the Planners Permission Meeting held on 09 July 2026, and was resolved as follows:

1. Project location

   1.1 The proposed dams and related infrastructure will be located on Portion 9 of the farm Uitvlucht 434-IR.

2. Midvaal Spatial Development Framework 2025/2026

   2.1 In terms of the above-mentioned policy, the subject properties fall outside the demarcated Urban Development Boundary, and the area is indicated as "farms".

3. Land Use Scheme, 2023

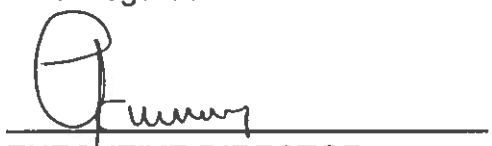
   3.1 The subject property is zoned for "Agriculture". The proposed development can be considered and accommodated as an ancillary use to the farming activities on the property, for the purpose of private use only.

3.2 Fully detailed building plans must be submitted for all proposed uses and structures, complying with all SABS standards.

It must be stated that the views/opinions and information herewith contained are provided without prejudice to whatever information may in future be provided to or attained by Council, and that Council would be at liberty to later amend or review its stance related hereto.

Should you require any additional information, please contact the writer during normal office hours.

Kind Regards



EXECUTIVE DIRECTOR:
DEVELOPMENT AND PLANNING
KATLEGO MOKWENA

DATE: 10/07/2006

Midvaal Local Municipality
PO Box 9, Meyerton, 1960
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DEVELOPMENT & PLANNING DEPARTMENT

Our Ref: Town Planning Enquiry No.3647
Enquiries: Mashudu Nematswerani

Zantow Environmental Consulting Services
P.O Box 3858
Vanderbijlpark
1900
E-mail: info@zantow.co.za

Dear Karien Zantow

COMMENTS ON THE DRAFT SCOPING REPORT FOR THE ENVIRONMENTAL AUTHORISATION PROCESS FOR THE CONSTRUCTION OF THREE DAMS FOR IRRIGATION AND GENERATION OF ENERGY (HYDRO-POWER) ON PORTION 9 OF THE FARM UITVLUCHT 434-IR.

The email correspondence received on the 07 July 2026 refers.

Your enquiry was discussed at the Planners Permission Meeting held on 09 July 2026, and was resolved as follows:

1. Project Location

   1.1 The subject property is located on Portion 9 of the Farm Uitvlucht 434-IR.

2. Zoning of the property as per Midvaal Land Use Scheme, 2023.

   2.1 The subject property is zoned “Agriculture” for Agricultural building, agricultural uses, commercial farm, conservation areas, cultivation shed, dwelling house, farm stall, greenhouse, government purposes, municipal use, nature reserve, prayer room, street and subsistence farming.

3. Midvaal Spatial Development Framework 2025-2026

   3.1 The subject property falls outside the demarcated Urban Development Boundary, and the area is indicted as “farms”.

4. Dolomite:

4.1 The property is not affected by dolomite.

5. Land Use Section

The proposed development **can be considered**, and accommodated as an ancillary use to the farming activities on the property for the purpose of private use only.

Furthermore, Midvaal Local Municipality would like to be registered as an interested and affected party to the proposed development.

Kind Regards

MASHUDU NEMATWERANI
ASSISTANT DIRECTOR: LAND USE MANAGEMENT
DATE: 09 JULY 2026

Appendix E-8

Comments from I&APs on Amendments to Basic Assessment (BA) Report

Appendix E-9

Copy of I&AP Register

Mr/Ms	Name & Last Name	Organisation/department	Address	City	Zip / Postal Code	Postal Address	Phone	Fax	E-mail Address	Registered
Government departments and parastatels										
	SUE Admin Unit	SUE Admin Unit - GDARD	[redacted]	Johannesburg	2001	[redacted]				Yes
	EIA Admin	DFFE		Pretoria	0083					Yes
Ms.	Natalie Koneight	Rand Water		Johannesburg	2000					Yes
Mr	Dakalo Phaswa	Midvaal Environmental Officer		Meyerton						Yes
Mr.	Jako Verster	Midvaal Local Municipality		Meyerton	1961					Yes
Mr	Delight Mukwevho	Midvaal Local Municipality		Meyerton	1961					Yes
	Mashudu Nematswerani	Midvaal Local Municipality		Meyerton	1961					Yes
	Kameshree Reddy	Midvaal Local Municipality		Meyerton	1961					Yes
	Fusi Puthini	Midvaal Local Municipality		Meyerton	1961					Yes
	Angeline Ramahlo	Midvaal Local Municipality		Meyerton	1961					Yes
	Shiluva Ntsanwisi	Midvaal Local Municipality		Meyerton	1961					Yes
	Samukelo Simamane	Midvaal Local Municipality		Meyerton	1961					Yes
Ms	Reshoketswe Malepe Maphehello	DWS Gauteng Regional office		Pretoria	0001					No
Mr	Sibusiso Mthembu	DWS Gauteng Regional office		Pretoria	0001					No
Adjacent land owners										
Mr.	Pieter Frederik van Eden	N/A	[redacted]	Meyerton	1961	[redacted]				No
Mr.	Harold Steyn	N/A		Meyerton	1961					No
Mr.	Herme Smit	N/A		Meyerton						No
Mr.	Gontse Ndlovu	N/A		Meyerton						No
Mr.	Johan Scheepers	N/A		Meyerton						No
Mr.	Anton Snyman	N/A		Meyerton						No
Registered interested and affected Parties										
Mr.	Barry Jacobs	N/A	[redacted]	Meyerton	1961	[redacted]				Yes
Mr.	Mohammed Patel	N/A		Meyerton	1961					Yes
NGOs										
Ms.	Nicole Loser	Center for environmental rights	[redacted]			[redacted]				No
	Admin	Center for environmental rights								No
	Admin	WESSA								No
Mr.	Mafoko Phomane	Groundwork								No
Mr.	Musa Chamane	Groundwork								No

Appendix F

Water Use License(s) authorization

DEPARTMENT OF WATER AFFAIRS AND FORESTRY

10007716

REGISTRATION CERTIFICATE

ISSUED IN TERMS OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)

This Registration Certificate is issued to :-

MR RM DA SILVA
6204055156089
97 SOUTPANSBERG DRIVE
OAKDENE
JOHANNESBURG
2190

To use water on the following property :-

UITVLUCHT 434 IR : PTN 9

T93041/1994

Water Management Area :-

UPPER VAAL

For the water use(s) of :-

Taking water from a water resource in terms of Section 21(a) of the National Water Act

(See attached Annexure)

GESERTIFISEER 'N WARE AFSKRIF VAN DIE OORSPRONKLIKE DOKUMENT EN DAT GEEN SIGBARE VERANDERINGE DEUR 'N ONGEMAGTIGDE PERSOON OP DIE OORSPRONKLIKE AANGEDRING IS NIE.

CERTIFIED A TRUE COPY OF THE ORIGINAL DOCUMENT AND THAT NO VISIBLE ALTERATIONS HAVE BEEN MADE BY AN UNAUTHORISED PERSON ON THE ORIGINAL.

DEPARTEMENT VAN WATERWESE
DEPARTMENT OF WATER AFFAIRS

DATUM/DATE 8/11/02

Regional Director

DEPARTEMENT VAN WATERWESE
STREEKDIREKTEUR/REGIONAL DIRECTOR
GAUTENGSTREEK/GAUTENG REGION
2002 -10- 30
PRIVAATSAK/PRIVATE BAG X995
PRETORIA, 0001
DEPARTMENT OF WATER AFFAIRS
Date stamp of issuing office

Date 2002/10/30

Gauteng Region

DISCLAIMER :
This certificate is :-

1. **not an acknowledgement of an entitlement to the registered water use;**
2. **issued without alterations or erasures and is invalid if it contains alterations not in conformity with the Department's official copy; and**
3. **in substitution of any registration certificate that may have been previously issued by the Department and the information is valid as at the date of issue.**

DEPARTMENT OF WATER AFFAIRS AND FORESTRY

Taking water from a water resource in terms of Section 21(a) of the National Water Act

---

Sector: AGRICULTURE: IRRIGATION

Water resource: SUIKERBOSCHRAND RIVER

Source: RIVER/STREAM

Total volume taken per year is 820740.00 **cubic metres** **(effective from** 2002-04-01**)**

Water use start date: 2002-04-01 **Water Use No.:** 1

Sector: AGRICULTURE: WATERING LIVESTOCK

Water resource: NO NAME

Source: BOREHOLE

Total volume taken per year is 730.00 **cubic metres** **(effective from** 2002-04-01**)**

Water use start date: 2002-04-01 **Water Use No.:** 2

DISCLAIMER :
This certificate is :-
1. not an acknowledgement of an entitlement to the registered water use;
2. issued without alterations or erasures and is invalid if it contains alterations not in conformity with the Department's official copy; and
3. in substitution of any registration certificate that may have been previously issued by the Department and the information is valid as at the date of issue.

Appendix G

Specialist Reports

Appendix G-1

Terrestrial Biodiversity and Wetland Assessment

November 2025

TERRESTRIAL BIODIVERSITY AND WETLAND IMPACT ASSESSMENT FOR THE PROPOSED LODGE CONSTRUCTION FOR BINNEPLAAS BOERDERY, GAUTENG PROVINCE

Authors:
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Dr. Elandrie Davoren

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DOCUMENT HISTORY	
DATE	**VERSION**
December 2025	V1.0

Executive summary

Excellence Ecology was appointed by Zantow Environmental Consulting Services (on behalf of Binneplaas Boerdery), to undertake a Terrestrial Biodiversity Impact Assessment as well as a Wetland Assessment for the environmental authorisation for the proposed construction of a lodge on Portion 9 of the farm Uitvlugt 434, Three Rivers, Gauteng Province. The construction of a lodge with 10 self-catering units and a main building, including a restaurant is proposed. They intend to use solar energy and harvest rainwater. The main building will be approximately 450 m^2 and the self-catering units will be approximately 60 m^2 each.

The desktop survey indicates that:

- The project area overlaps the Soweto Highveld Grassland (Vulnerable) and the Central Free State Grassland (Least concern) vegetation units
- According to the Critical Biodiversity Areas (CBA) map, the central pin for the proposed lodge is positioned adjacent to a Terrestrial CBA 1. Depending on the final layout, the development footprint may fall partially or entirely within this sensitive area.
- The project area is 21 km south-west of the Suikerbosrand KBA (Figure 11). Given this distance, the proposed development will not have any direct impact on the KBA.
- The project area does not fall within any National Protected Areas. It is located approximately 20 km north-east of the Suikerbosrand Provincial Nature Reserve and about 16 km south-east of the Vaaldam Nature Reserve. However, the site is situated within a National Protected Area Expansion Strategy (NPAES) Focus Area
- The project area is located in the Vaal-Orange Water Management Area (WMA) and the C21G Quaternary Catchment.
- The footprint of the proposed lodge falls within an NWM6 wetland and is located adjacent to a NFEPA-designated wetland and NFEPA river (Figure 14).
- The project area is not located in or close to a SWSA. It is approximately 43 km south-east of the Far West Karst Region groundwater SWSA

A site visit was conducted on the 6th of November 2025 to get baseline information of the area and to identify sensitive areas and SCC.

There are two distinct vegetation units in the project area namely:

- *Themeda triandra – Ziziphus zeyheriana* grassland and
- Wetlands.

The area where the lodge is proposed to be developed is rocky grassland with scattered trees. It is currently used for cattle grazing. The unit has been disturbed to some extent by cattle grazing, but it is likely primary grassland, as no signs of historical cultivation have been recorded. Dominant grass species include *Themeda triandra, Melinis repens* and *Eragrostis chloromelas*. Dominant trees include *Vachellia karroo* and *Searsia pyroides* and dominant shrubs include *Ziziphus zeyheriana* and *Seriphium plumosum*. Dominant forbs recorded include *Ledebouria* spp., *Hypoxis hemerocallidea, Hilliardiella oligocephala* and *Helichrysum rugulosum*.

No plant species of conservation concern (SCC) or protected trees were recorded in this unit. Three species endemic to South Africa were recorded in this unit namely *Hermannia transvaalensis, Ledebouria ovalifolia and Trachyandra erythrorrhiza.* This unit has a high sensitivity as it is primary grassland in the Vulnerable Soweto Highveld Grassland.

The Suikerbosrant River, which runs through the project area, is a tributary to the Vaal River. There are several floodplain wetlands next to the river, which receives water when the river floods its banks, but it also receives runoff from adjacent areas. Six floodplain wetlands were delineated in the larger project area. The River and wetlands were assessed and the results are given in the table below:

Classification	**PES**	**EIS**	**REC**	**Buffer**
River	B: Largely natural	Moderate	B: Maintain	17 m
Floodplain wetlands	C: Moderately modified	Moderately low	C: Maintain	23 m

No fauna SCC were recorded during the field assessment. The landowner reported possible presence of the spotted-necked otter. Two avifaunal SCC are considered to have a medium likelihood of occurrence in the project area, namely *Ardea goliath* (Goliath Heron, Near Threatened) and *Calidris ferruginea* (Curlew Sandpiper, Vulnerable). See Table 13 for details of other fauna SCC.

The Screening Tool Sensitivity Verification is summarised in the table below:

Theme	**DFFE Screening Tool Report Sensitivity**	**Specialist Sensitivity**	**Rating Confirmed/disputed and Reasons**
Terrestrial Biodiversity	Very High	Very High	Confirmed The area where the lodge is proposed consists of primary grassland of the Vulnerable Soweto Highveld Grassland
Aquatic Biodiversity	Very high	Low to Very high	Confirmed The riparian area and the floodplain wetlands have a very high aquatic sensitivity. Grassland areas have a low aquatic biodiversity sensitivity.
Animal Species	High	Low to High	Confirmed The spotted-necked otter is likely to be present next to the Suikerbosrant River. Some other fauna SCC may be present at the river, while the area where the lodge is proposed no fauna SCC were recorded or are likely to be present and therefore it has a low sensitivity for Animal Species.
Plant Species	Medium	Low to Medium	Disputed No plant Species of Conservation Concern (SCC) were recorded, there ais suitable habitat for plant SCC in the riparian area.

A Risk Assessment Matrix was completed for the following potential impacts on the wetlands namely

1) Disturbance of wetlands
2) Sedimentation of wetlands and river
3) Soil and water pollution
4) Spread and increase in Invasive Alien Vegetation

All risks rated as low.

A NEMA Impact Assessment was also completed to rate the following potential impacts:

1) Removal of indigenous vegetation
2) Habitat destruction
3) Disturbance of wetlands
4) Spread of alien and invader species
5) Soil erosion and sedimentation
6) Pollution

All impacts rated low except for removal of indigenous vegetation, which rated medium before mitigation and low after mitigation.

The proposed development can be approved from a terrestrial and aquatic biodiversity perspective, as long as, all mitigation measures are adhered to. See Section 7 for mitigation measures.

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List of abbreviations	
BLSA	BirdLife South Africa
CBA	Critical Biodiversity Areas
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
DFFE	Department of Forestry, Fisheries and the Environment
DWAF	Department of Water Affairs and Forestry
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Areas
ESO	Environmental Site Officer
GN	General Notice
GPS	Global Positioning System
IBA	Important Bird Areas
LC	Least Concern
NEMA	National Environmental Management Act
NEM:BA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Protected Areas
NFA	National Forests Act
NPAES	National Protected Area Expansion Strategy
NT	Near Threatened
NWM5	National Wetland Map 5
PA	Protected Areas
RLE	Red List of Ecosystems
SA	South Africa
SANBI	South African National Biodiversity Institute
SARCA	Southern African Reptile Conservation Assessment
SCC	Species of Conservation Concern
SWSA	Strategic Water Source Areas
VU	Vulnerable
WULA	Water Use License Application

1 INTRODUCTION

Excellence Ecology was appointed by Zantow Environmental Consulting Services, on behalf of Binneplaas Boerdery, to undertake a Terrestrial Biodiversity Impact Assessment and a Wetland Assessment as part of the environmental authorisation process for the proposed construction of a tourism lodge on Portion 9 of the farm Uitvlugt 434, Three Rivers, Gauteng Province.

1.1 TERMS OF REFERENCE

Terrestrial Biodiversity Impact Assessment

- Desktop survey to determine which species of conservation concern and other sensitivities may be present (EIA screening tool, Critical Biodiversity Areas (CBA), Ecological Support Areas (ESA), National Freshwater Ecosystem Priority Areas (NFEPAs), Important Bird Areas (IBA), Nationally Threatened Ecosystems etc.).
- Site visit to confirm the presence or absence of species of conservation concern (SCC) and other sensitivities.
- Report writing:
  - Desktop assessment
  - Description of fauna and flora recorded, and fauna expected to be present according to distribution and suitable habitat,
  - NEMA Impact Assessment and mitigation measures,
  - Sensitivity map.

1.2 LEGAL FRAMEWORK

1. The National Environmental Management Act (107 of 1998).
2. National Environmental Management: Biodiversity Act (10 of 2004).
3. National Environmental Management: Biodiversity Act (10 of 2004): Draft lists of threatened and protected species, 2005.
4. National Environmental Management: Biodiversity Act (10 of 2004). Alien and invasive species lists, 2020.
5. The National Forest Act: Protected tree species.
6. Environmental Impact Assessment (EIA) regulations.
7. Terrestrial Biodiversity, Plant and Animal Species protocols, gazetted 30 October 2020 (Government Notice number 1150).
8. Transvaal Nature Conservation Ordinance (12 of 1983).
9. Gauteng Nature Conservation Bill (2014).
10. GDARD Requirements for Biodiversity Assessments Version 3 (2014)

NEMA and the NEM:BA ensure the protection of ecological processes, natural systems and the preservation of biotic diversity within the natural environment. They also ensure the protection of the environment against disturbance, deterioration, defacement or destruction as a result of man-made

structures, installations, processes, products or activities.

1.3 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations apply to this assessment and should be considered when interpreting the findings:

- Ideally, vegetation and ecological surveys should be repeated across multiple seasons and over several years to capture inter-annual variability and seasonal species turnover. Due to project timeframes, long-term and multi-season surveys were not feasible, and results therefore reflect conditions recorded during a single survey period.
- The site visit was conducted on 6 November 2025, during the wet season, which is generally optimal for biodiversity and wetland assessments. However, several grass species could not be confidently identified as they had not yet fully recovered from winter dormancy.
- Wetland extent, hydrological signatures, and soil moisture conditions vary seasonally and annually. The delineation reflects the conditions observed at the time of the survey. Confirming the permanence or temporariness of wetland systems would require longer-term hydrological monitoring.
- National wetland datasets (e.g., NWM, NFEPA) are modelled at a coarse spatial scale and may over- or under-estimate actual wetland extent. These layers were therefore used as indicators and verified in the field.
- The mapping of wetland and habitat boundaries relied on Google Earth imagery and a handheld GPS device, resulting in an estimated spatial accuracy of ±5 m.
- Faunal species that are cryptic, nocturnal, elusive, or migratory may not be detected during a daytime, single-season survey. Absence of direct observations does not confirm absence from the site.
- Recent weather conditions (e.g., rainfall prior to the survey) may have influenced the detectability of wetland indicators, amphibians, and certain plant species.
- Past and ongoing land-use practices (such as grazing, mowing, or informal disturbance) may have altered vegetation structure and species composition, affecting interpretation of baseline ecological condition.
- Desktop information, including CBA maps, NFEPA layers, and Red List databases, is assumed to be accurate and up to date at the time of use. Future updates to these datasets may alter the conservation importance of the site.

Despite these limitations, the assessment integrates a detailed desktop review with extensive field observations. This combined approach provides a robust basis for evaluating the ecological characteristics and sensitivities of the site.

1.4 INFORMATION SOURCES

The following information sources were obtained:

1. Relevant maps through GIS mapping, and information on the natural environment of the area

concerned.

2. Legislation pertaining to the fauna and flora study as relevant.
3. National and provincial sensitivity data.
4. The vegetation of South Africa, Lesotho and Swaziland (Mucina and Rutherford, 2006).
5. Red data species lists from the South African National Biodiversity Institute (SANBI).
6. South African Red Data Lists for fauna (See reference list for detail).

Requirements regarding the wetland survey as stipulated in the following guidelines:

1. Practical field procedure for identification and delineation of wetlands and riparian areas (DWAF, 2005).
2. National Wetland Classification System for South Africa (Ollis *et al*., 2013).
3. WET-Health (Version 2.0): A refined suite of tools for assessing the present ecological state of wetland ecosystems (Macfarlane *et al*., 2020).
4. WET EcoServices (Kotze *et al*., 2008).

2 METHODS

2.1 DESKTOP SURVEY

A desktop survey was completed to determine whether the project area is located in any sensitive areas, like CBA, ESA, NFEPAs, IBA, Nationally Threatened Ecosystems, Strategic Water Source Areas (SWSA) etc. Climate and vegetation were also discussed for the project area.

2.2 FLORA SURVEY

A desktop study was completed to find out into which vegetation type, according to Mucina and Rutherford (2006), the project area falls. A field survey was completed on the 6th of November 2025, during which vegetation was surveyed. The following track was walked / driven during the site visit:

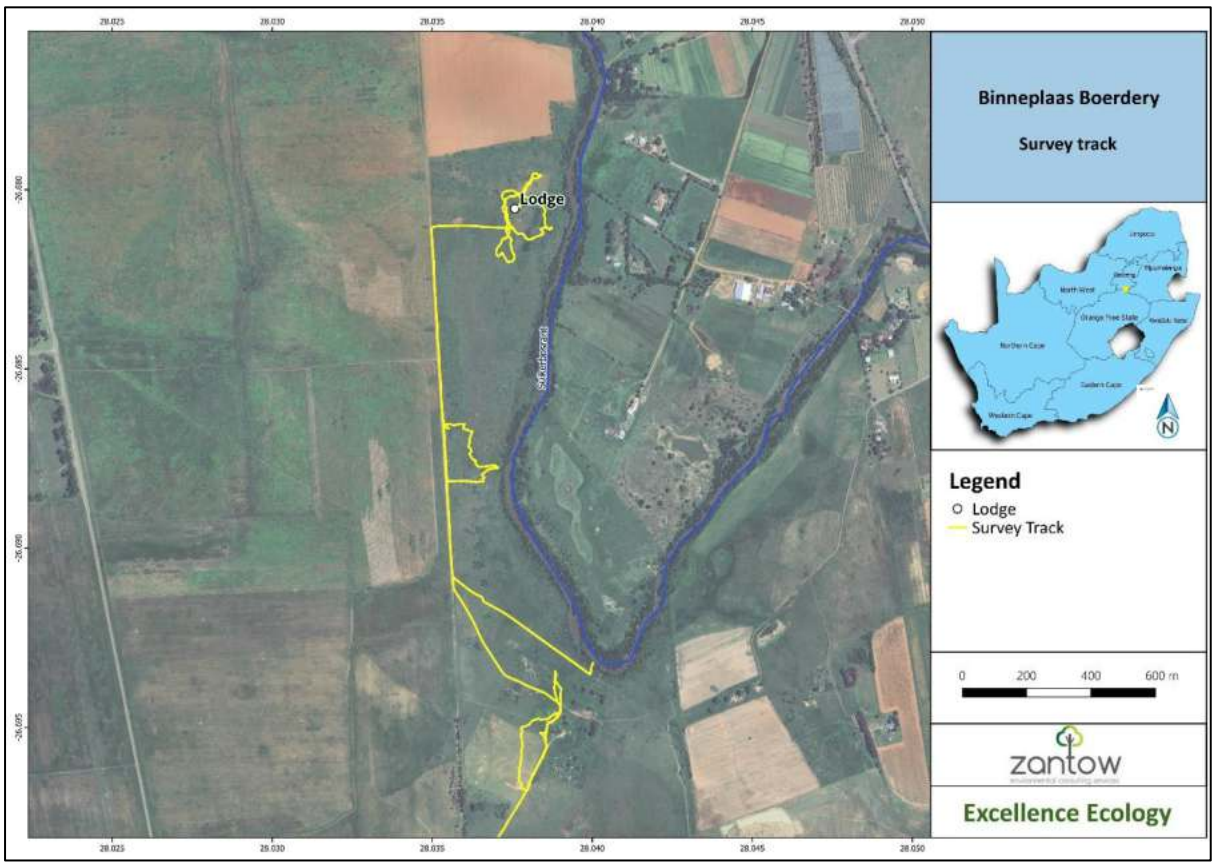


Figure 1: Track surveyed during site visit

A search for Species of Conservation Concern (SCC) was conducted. Vegetation was described in terms of dominant species, protected species, and key environmental factors such as soil type and land-use history. A species list was compiled for the project area, with each recorded plant assigned its Red List category, endemism status, and invasive species category.

2.3 FAUNA SURVEY

A comprehensive desktop review was undertaken to identify fauna Species of Conservation Concern (SCC) that may potentially occur within the broader region, using the IUCN Red List and other relevant

biodiversity databases. Habitat types were identified and described during the field survey to assess whether suitable habitat is present on site for any SCC known from the area. All fauna species observed, detected indirectly, or otherwise recorded during the field assessment are listed in this report.

2.4 WETLAND CLASSIFICATION

Wetlands can be classified into various hydrogeomorphic (HGM) types based on key characteristics, including their geomorphic setting within the landscape (e.g., valley-bottom systems, floodplains, depressions, and whether they are open or closed), their primary water sources (surface water, groundwater, or a combination), the nature of water movement through the system (diffuse or channelled flow), and the mechanisms by which water exits the wetland (Macfarlane *et al*., 2009). The HGM classification provides valuable insight into the structure, functioning, and ecological processes operating within a wetland.

2.5 WETLAND DELINEATION

Wetland delineation is essential to define the extent of a wetland. Wetland delineation procedures also determine the different zones of the wetland. Wetlands typically have three zones: the temporary, seasonal and permanent zones (Department of Water Affairs and Forestry, 2005). The wetland delineation approach developed by the Department of Water and Sanitation (previously known as the Department of Water Affairs and Forestry) is the accepted approach used by practitioners in South Africa and was therefore used for this report.

In order to identify the different wetland zones, two indicators are used namely vegetation and soil. Wetland soils (hydromorphic soils) have certain characteristics. When soil is saturated with water, anaerobic conditions persist, which leads to iron being dissolved and leached out of the soil. If the soil dries out (in the dry season for example) iron will accumulate, forming mottles. The level to which a soil is gleyed (have a grey colour due to the iron having been leached out) and the presence of mottles, indicates duration of the year that the soil is saturated with water. The permanent zone is mostly found in the centre of the wetland and is almost always saturated with water. Soils that are permanently waterlogged will be gleyed with no or little mottles because it does not dry out and mottles are not formed. The permanent zone is surrounded by the seasonal zone, which is saturated with water for a significant duration of the rainy season. Seasonally waterlogged soils will also be gleyed, but to a lesser extent, with many mottles. The temporary zone surrounds the seasonal zone and is only saturated for short periods of the year, which is sufficient for soil to become gleyed to some extent. Few or no mottles form in the temporary zone (Department of Water Affairs and Forestry, 2005). Only the outer boundary of the wetland (temporary zone) was identified and delineated for this study.

Soil was augured to confirm the boundaries of the wetland. The wetland was mapped with a combination of the field data and satellite images. Vegetation is also an important indicator of wetlands, as most terrestrial plants are not adapted to live in waterlogged conditions. Wetland soils are low in oxygen, and plant roots needs oxygen to respire. Plants that do not have certain adaptations cannot live in wetland conditions. In anaerobic conditions (no or little oxygen) some nutrients become unavailable to plants and the concentration of certain elements can reach toxic levels. Plants adapted

to these conditions are called hydrophytes and they can be used to indicate the presence and boundaries of a wetland (Department of Water Affairs and Forestry, 2005).

For the wetland delineation in this study more emphasis was placed on the vegetation. Findings were confirmed by means of soil auguring and then extrapolated with the help of satellite images.

2.6 PRESENT ECOLOGICAL STATUS (PES) OF WETLANDS

WET-Health (Macfarlane *et al.*, 2020) is designed to assess the PES of a wetland by scoring the perceived deviation from a theoretical reference condition, where the reference condition is defined as the un-impacted condition in which ecosystems show little or no influence of human actions. In thinking about wetland health or PES, it is thus appropriate to consider 'deviation' from the natural or reference condition, with the ecological state of a wetland taken as a measure of the extent to which human impacts have caused the wetland to differ from the natural reference condition (Macfarlane *et al.*, 2020).

Whilst wetland features vary considerably from one wetland to the next, wetlands are all broadly influenced by their climatic and geological setting and by three core inter-related drivers, namely hydrology, geomorphology and water quality. The biology of the wetland (in which vegetation generally plays a central role) responds to changes in these drivers, and to activities within and around the wetland. The interrelatedness of these four components is illustrated schematically in Figure 2 below and forms the basis of the modular-based approach adopted in WET-Health Version 2 (Macfarlane *et al.*, 2020).

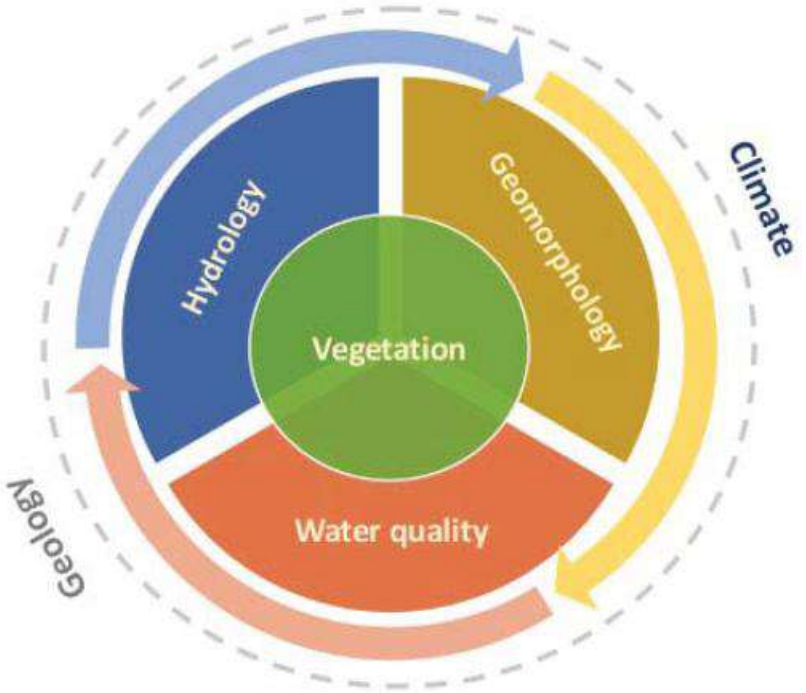


Figure 2: Diagram representing the four key components of Wetland PES considered in WET-Health Version 2 (Macfarlane *et al.*, 2020).

The impact categories, scores, and associated present state categories are summarised in Table 1.

Table 1: Impact scores and categories of Present Ecological State used by WET-Health for describing the integrity of the wetland.

Impact Category	Description	Impact Score Range	Present Ecological State Category
None	Unmodified, or approximates natural condition	0 – 0.9	A
Small	Largely natural with few modifications, but with some loss of natural habitats	1 – 1.9	B
Moderate	Moderately modified, but with some loss of natural habitats	2 – 3.9	C
Large	Largely modified. A large loss of natural habitat and basic ecosystem function has occurred	4 – 5.9	D
Serious	Seriously modified. The losses of natural habitat and ecosystem functions are extensive	6 – 7.9	E
Critical	Critically modified. Modification has reached a critical level and the system has been modified completely with almost complete loss of natural habitat	8 – 10.0	F

2.7 Ecological Importance and Sensitivity (EIS)

The Ecological Importance and Sensitivity (EIS) assessment was conducted according to the guidelines as discussed by DWAF (1999). Here DWAF defines "ecological importance" of a water resource as an expression of its importance to the maintenance of ecological diversity and function on local and wider scales. "Ecological sensitivity", according to DWAF (1999), is the system's ability to resist disturbance and its capability to recover from disturbance once it has occurred.

Table 2: Description of the EIS Categories

EIS Category	Range of Median	Recommended Ecological Management Class
Very High	3.1 to 4.0	A
High	2.1 to 3.0	B
Moderate	1.1 to 2.0	C
Low Marginal	< 1.0	D

2.8 Recommended Ecological Category (REC)

This is the Ecological Category in which it is recommended that a water resource be managed. The modus operandi is that, if the Ecological Importance and Sensitivity is high or very high, the aim should

be to improve the condition of the resource. However, the causes related to a particular PES should also be considered to determine if improvement is realistic and attainable. This relates to whether the problems in the catchment which are causing an impacted PES can be addressed and mitigated for. If the Ecological Importance and Sensitivity is evaluated as moderate or low, the aim should be to maintain the wetland in its PES. Within the Ecological Reserve context, ecological categories A-D can be recommended as future states (the Recommended Ecological Category) depending on the EIS and PES. Ecological Categories E and F are regarded as ecologically unacceptable, and remediation is needed (Malan & Day, 2012).

Table 3: Recommended Ecological Category

Attainable PES	Importance			
	Very High	High	Moderate	Low
A	A Maintain	A Maintain	A Maintain	A Maintain
B	A Improve	A/B Improve	B Maintain	B Maintain
C	B Improve	B/C Improve	C Maintain	C Maintain
D	C Improve	C/D Improve	D Maintain	D Maintain
< D	D Improve	D Improve	D Improve	D Improve

2.9 Risk Assessment Matrix

A Risk Assessment, as required in terms of the General Authorisation Notice 509 of 2016 (Gazette No.40229), for any development proposed within the 1:100-year flood line. The risk assessment is based on the ratings given in Table 4 to Table 10 below and are based on the DWS RISK RATING TABLES [for Risk Assessment Matrix (version 2.1.1): Section 21 (c) and (i) Water Use Authorisation].

RISK RATING TABLES [for Risk Assessment Matrix (version 2.1.1): Section 21 (c) and (i) Water Use Authorisation]

Table 4: Importance of Affected Watercourse/s

Low or Very Low EI / EIS / Wetland Importance rating; OR, If EI/EIS has not been determined, Low rating based on presence of: - no areas identified to be of conservation importance (i.e. OESA at most); and/or - only species/habitats of Least Concern on the IUCN Red List or on a regional/national Red List (including freshwater ecosystem types of Least Concern in terms of the NBA); and/or - only species which are common and widespread and/or habitats of low conservation interest; and/or - highly degraded habitat of extremely small size	**Low / Very low** = 2
Medium EI / EIS / Wetland Importance rating; OR, If EI/EIS has not been determined, Moderate rating based on presence of: - CESAs; and/or - species/habitats listed as VU or NT on the IUCN Red List or on a regional/national Red List (including VU/NT freshwater ecosystem types in terms of the NBA); and/or - functionality as an important ecological corridor or buffer area	**Moderate** = 3
High EI / EIS / Wetland Importance rating; OR, If EI/EIS has not been determined, High rating based on presence of: - CBA2; and/or - species or degraded habitats (in poor condition) listed as EN or CR on the IUCN Red List or on a regional/national Red List (including EN/CR freshwater ecosystem types in terms of the NBA)	**High** = 4
Very high EI / EIS / Wetland Importance rating; OR, If EI/EIS has not been determined, Very high rating based on presence of: -CBA1; and/or - FEPA; and/or - species or intact habitats (in fair or good condition) listed as EN or CR on the IUCN Red List or on a regional/national Red List (including EN/CR freshwater ecosystem types in terms of the NBA); and/or - KBA or IBA or Ramsar site	**Very high** = 5

* EI=Ecological Importance; EIS=Ecological Importance & Sensitivity; OESA=Other Ecological Support Areas; IUCN=International Union for Conservation of Nature; CESA=Critical Ecological Support Area; NBA=National Biodiversity Assessment; VU=Vulnerable; NT=Near Threatened; EN=Endangered; CR=Critically Endangered; CBA=Critical Biodiversity Area; FEPA=Freshwater Ecosystem Priority Area; KBA=Key Biodiversity Area; IBA=Important Bird Area.

Table 5: Intensity of Impact

What is the intensity of the impact on the resource quality (hydrology, water quality, geomorphology, biota)?

Negative Impacts	
Negligible / non-harmful; no change in PES	0
Very low / potentially harmful; negligible deterioration in PES (<5% change)	+1
Low / slightly harmful; minor deterioration in PES (<10% change)	+2
Medium / moderately harmful; moderate deterioration in PES (>10% change)	+3
High / severely harmful; large deterioration in PES (by one class or more)	+4
Very high / critically harmful; critical deterioration in PES (to E/F or F class)	+5
Positive Impacts	
Negligible; no change in PES	0
Very low / potentially beneficial; negligible improvement in PES (<5% change)	-1
Low / slightly beneficial; minor improvement in PES (<10% change)	-2
Medium / moderately beneficial; moderate improvement in PES (>10% change)	-3
Highly beneficial; large improvement in PES (by one class or more) and/or increase in protection status	-4
Very highly beneficial; improvement to near-natural state (A or A/B class) and/or major increase in protection status	-5

NOTE: Positive Impacts must be given a negative Intensity Score

*PES of affected watercourses must be considered when scoring Impact Intensity

Table 6: Spatial Scale (Extent) of Impact

How big is the area that the activity is impacting on, relative to the size of the impacted watercourses?

Very small portion of watercourse/s impacted (<10% of extent)	1
Moderate portion of watercourse/s impacted (10-60% of extent)	2
Large portion of watercourse/s impacted (60-80%)	3
Most or all of watercourse/s impacted (>80%)	4
Impacts extend into watercourses located well beyond the footprint of the activities	5

Table 7: Duration of Impact

How long does the activity impact on the resource quality?

Transient (One day to one month)	1
Short-term (a few months to 5 years) OR repeated infrequently (e.g., annually) for one day to one month	2
Medium-term (5 – 15 years)	3
Long-term (ceases with operational life)	4
Permanent	5

Table 8: Likelihood of the Impact

What is the probability that the activity will impact on the resource quality?

Improbable / Unlikely	20%
Low probability	40%
Medium probability	60%
Highly probable	80%
Definite / Unknown	100%

Table 9: Risk Rating Classes

RATING	CLASS	MANAGEMENT DESCRIPTION
1 – 29	**(L) Low Risk OR (+) Positive (+ +) Highly positive**	Acceptable as is or with proposed mitigation measures. Impact to watercourses and resource quality small and easily mitigated, or positive.
30 – 60	**(M) Moderate Risk**	Risk and impact on watercourses are notable and require mitigation measures on a higher level, which costs more and require specialist input. Licence required.
61 – 100	**(H) High Risk**	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

A low risk class must be obtained for all activities to be considered for a General Authorisation (GA)

Table 10: Calculations and Maximum Values

Intensity = Maximum Intensity Score (negative value for positive impact) X 2	MAX = 10
Severity = Intensity + Spatial Scale + Duration (<Intensity - Spatial Scale - Duration> for positive impact)	MAX = 20 (MIN = -20 for +ve impacts)
Consequence = Severity X Importance rating	MAX = 100
Significance\Risk = Consequence X (Likelihood / 100)	MAX = 100

RISK ASSESSMENT MUST BE CONDUCTED BY A SACNASP REGISTERED PROFESSIONAL MEMBER AND THE ASSESSOR MUST:

1) CONSIDER ALL THE RELEVANT PHASES OF PROPOSED ACTIVITIES (CONSTRUCTION AND OPERATIONAL PHASES, AS A MINIMUM);

2) CONSIDER RISKS TO RESOURCE QUALITY WITH THE PROPOSED CONTROL MEASURES (AS SPECIFIED) ASSUMED TO BE IN PLACE;

3) CONSIDER THE PRESENT ECOLOGICAL STATUS (PES) AND ECOLOGICAL IMPORTANCE & SENSITIVITY (EIS) OF THE WATERCOURSE AS RECEPTOR OF RISKS POSED;

4) RATE POSITIVE IMPACTS/RISKS REDUCTION USING NEGATIVE IMPACT INTENSITY SCORES IN THE RISK ASSESSMENT MATRIX;

5) INDICATE CONFIDENCE LEVEL OF SCORES PROVIDED IN THE LAST COLUMN AS A CATEGORY (LOW / MEDIUM / HIGH).

2.10 SENSITIVITY ANALYSIS AND ZONING

The ecological sensitivity of any piece of land is based on its inherent ecosystem service and overall preservation of biodiversity. The project area's sensitivity was determined, considering the following factors:

Ecological function

Ecological function relates to the extent of ecological connectivity among systems within the broader landscape matrix. Systems exhibiting high levels of connectivity are regarded as more sensitive, as they contribute significantly to ecosystem services (such as those provided by wetlands) and to the maintenance of regional biodiversity.

Conservation importance

Conservation importance relates to species diversity, endemism (unique species or unique processes) and the high occurrence of threatened and protected species or ecosystems protected by legislation.

Sensitivity scale

High – sensitive ecosystem with either low inherent resistance or low resilience towards disturbance factors or highly dynamic systems considered being important for the maintenance of ecosystem integrity. Most of these systems represent ecosystems with high connectivity with other important ecological systems or with high species diversity and usually provide suitable habitat for a number of threatened or rare species. These areas should be protected.

Medium – These are slightly modified systems which occur along gradients of disturbances of low-medium intensity with some degree of connectivity with other ecological systems or ecosystems with intermediate levels of species diversity but may include potential ephemeral habitat for threatened species; and

Low – Degraded and highly disturbed / transformed systems with little ecological function and are generally very poor in species diversity.

2.11 NEMA IMPACT ASSESSMENT PROCEDURE

Impacts and mitigation measures were identified, described, and assessed. An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need (Plomp, 2004).

Criteria for assessing the impacts are given in the table below:

Table 11: Impact assessment criteria

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be

		mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible, and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		

This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity. The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

2.12 Methodology for Identification of Mitigation Measures

The mitigation hierarchy (Figure 3) illustrates the actions which can be undertaken to respond to negative impacts and the preference give to mitigation measures. The topmost measures are preferred, and the preference for mitigation measures decreases the further one moves down the hierarchy. For each impact assessed, mitigation measures will be proposed to reduce and/or avoid negative impacts and enhance positive impacts.

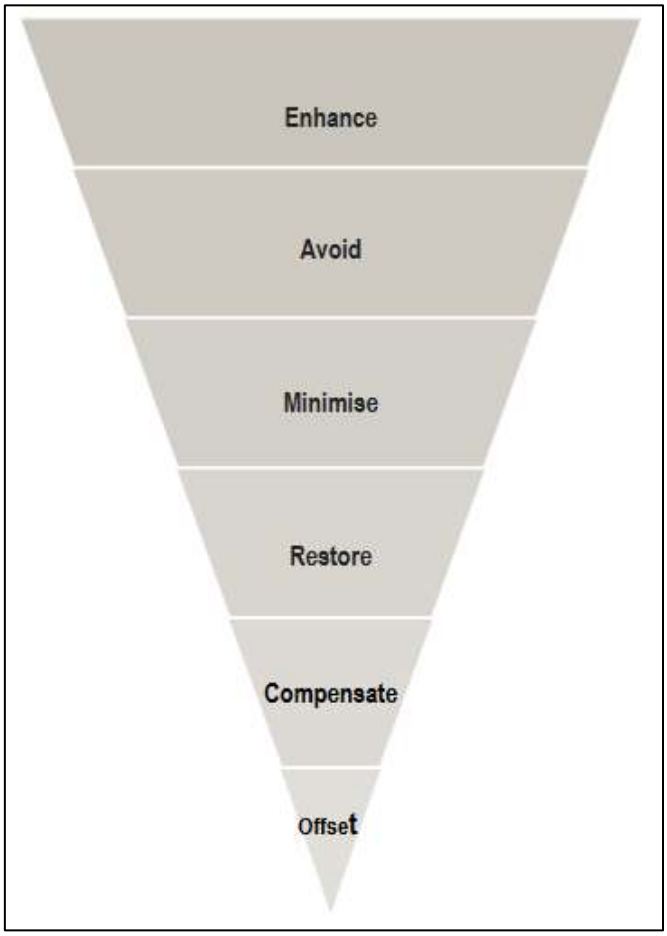


Figure 3: Mitigation hierarchy

Impact avoidance is most effective when applied at the earliest stages of project planning. It involves measures to prevent adverse impacts from occurring and can include:

- Project or component exclusion – choosing not to undertake certain activities or elements that would result in negative impacts;
- Avoiding sensitive areas – siting the project away from ecologically or environmentally sensitive areas; and
- Preventative measures – implementing strategies or controls to stop potential adverse impacts before they occur.

Impact minimisation is applied during impact identification and prediction to limit or reduce the severity, extent, duration, or magnitude of adverse impacts. Measures may include:

- Scaling or relocation – reducing the size of the proposal or relocating elements to less sensitive areas;
- Redesign – modifying project components or operational approaches to reduce impacts; and
- Supplementary management measures – implementing additional strategies to mitigate identified impacts during construction or operational phases.

Impact compensation is implemented to address unavoidable residual adverse impacts that remain

after avoidance, minimisation, and rehabilitation measures have been applied. Compensation can be achieved through:

- Habitat enhancement, for example improving ecological condition or functionality within the remaining natural areas.
- Restoration, involving the rehabilitation of the affected site or environment to its previous condition or an improved state.
- Biodiversity offsets, where equivalent ecological values are replaced at another suitable location (e.g., through wetland restoration or engineered wetland creation to compensate for lost ecosystem services).

The mitigation described in the above diagram represents the full range of plausible and pragmatic measures that can be implemented

3 BACKGROUND TO THE STUDY AREA

3.1 LOCATION

The proposed development is situated on Portion 9 of the Farm Uitvlugt 434, located in Three Rivers, Gauteng Province (Figure 4). The construction of a lodge with 10 self-catering units and a main building, including a restaurant is proposed. They intend to use solar energy and harvest rainwater. The main building will be approximately 450 m^2 and the self-catering units will be approximately 60 m^2 each.

3.2 CLIMATE

The climate of Vereeniging is generally warm and temperate. Rainfall is strongly seasonal, with the majority of precipitation occurring during the summer months. According to the Köppen–Geiger climate classification, the area falls within the Cwb category. The average annual temperature is 17.0 °C, and the mean annual rainfall is approximately 752 mm.

Vereeniging experiences warm, humid summers from December to March, with January being the hottest month. Winters are cool and very dry, with July receiving the lowest rainfall and recording the lowest average temperatures. The peak rainy period occurs in December, which receives the highest monthly precipitation (Climate-data.org, 2025).

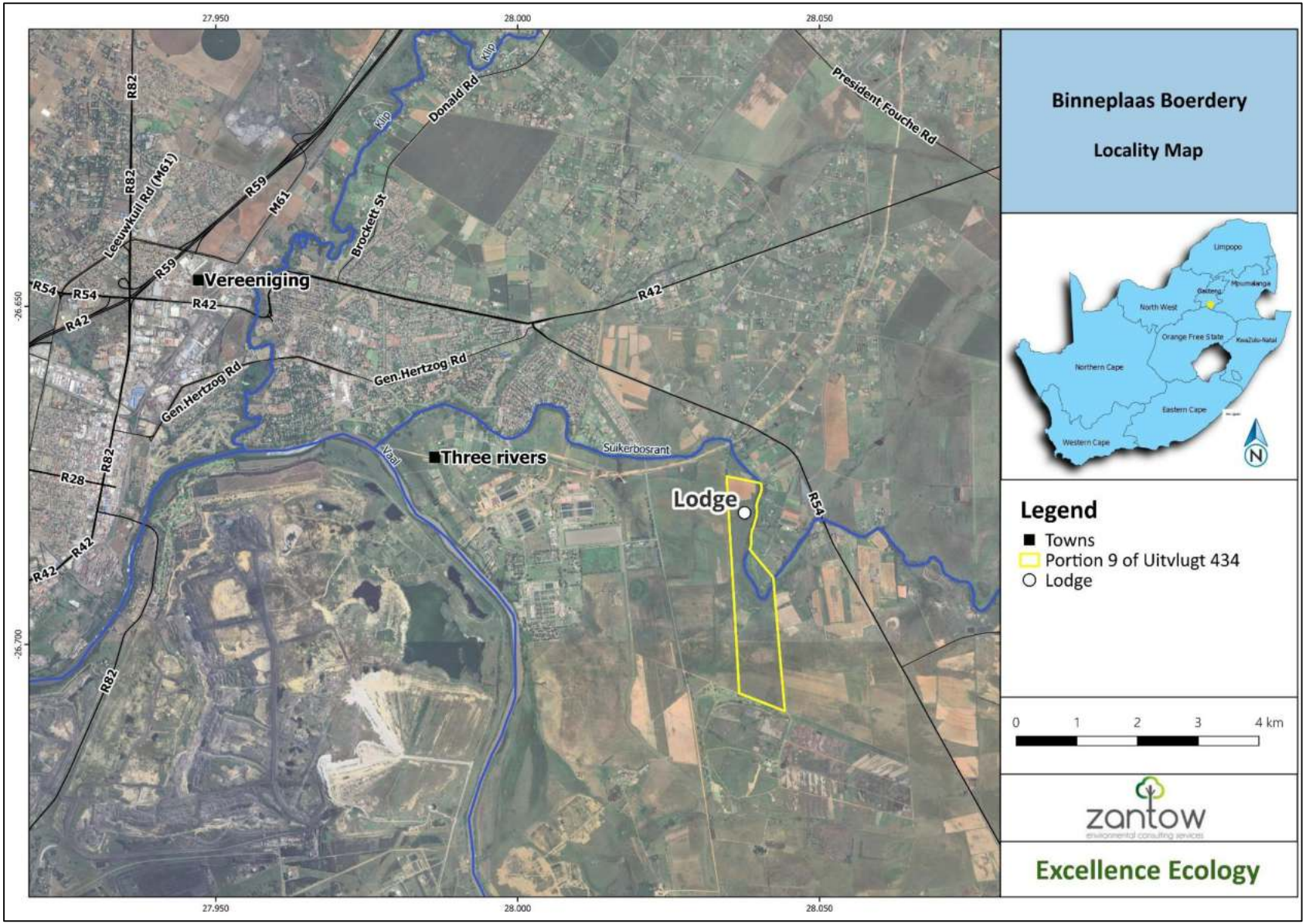


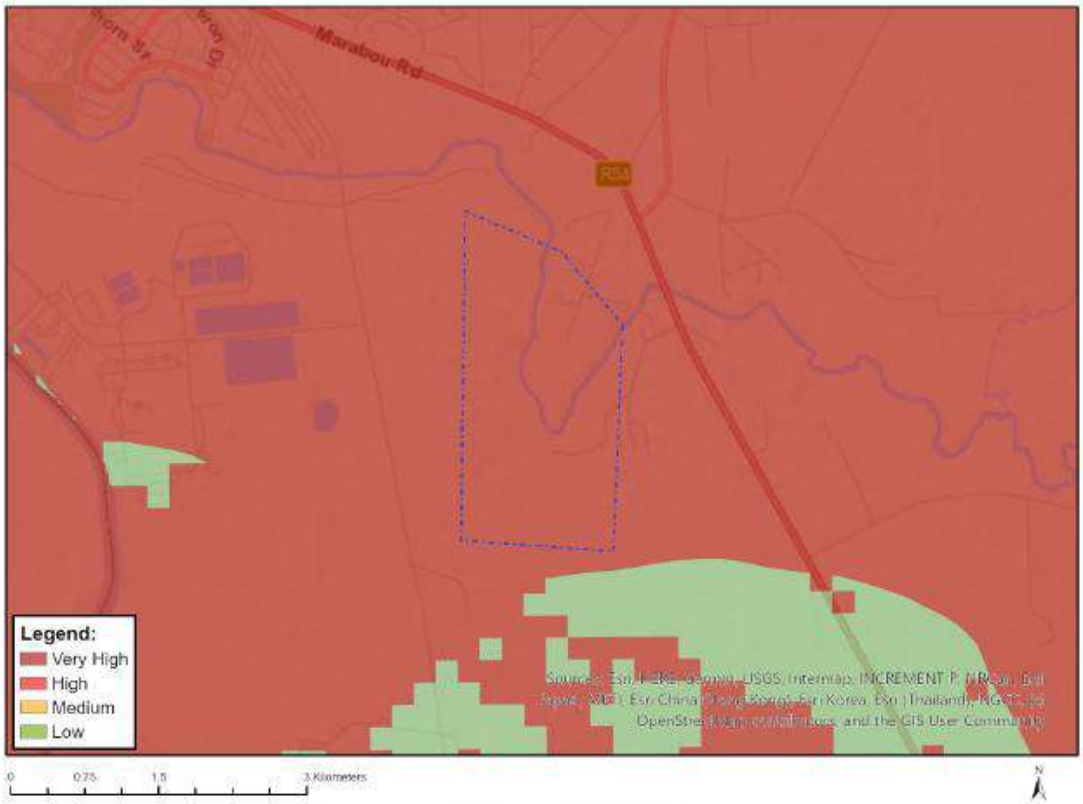
Figure 4: Locality Map

3.3 EIA SCREENING TOOL

According to the national web-based environmental screening tool in terms of NEMA, the site has the following sensitivities:

- Terrestrial Biodiversity: Very High Sensitivity (Figure 5).
- Aquatic Biodiversity: Very High Sensitivity (Figure 6).
- Animal Species Theme: High Sensitivity (Figure 7).
- Plant Species Theme: Medium Sensitivity (Figure 8).

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



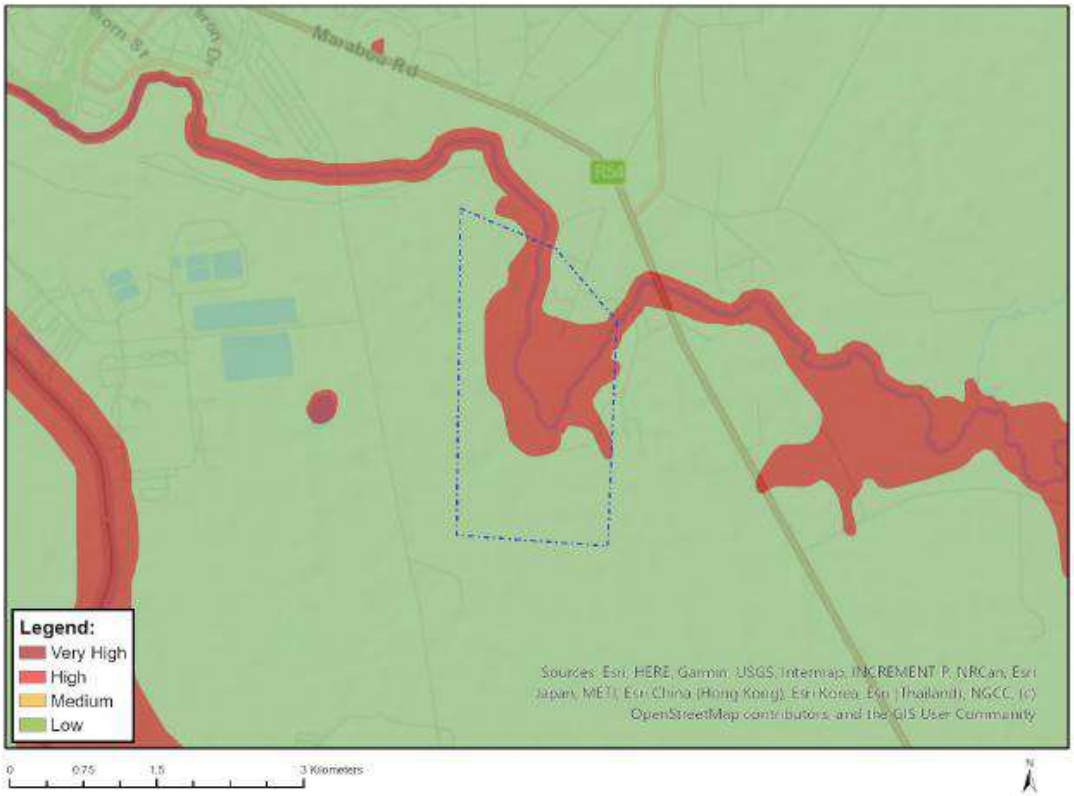
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1
Very High	CBA 2
Very High	ESA 1
Very High	ESA 2
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	VU_Soweto Highveld Grassland

Figure 5: Terrestrial biodiversity theme sensitivity according to the Screening Tool

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



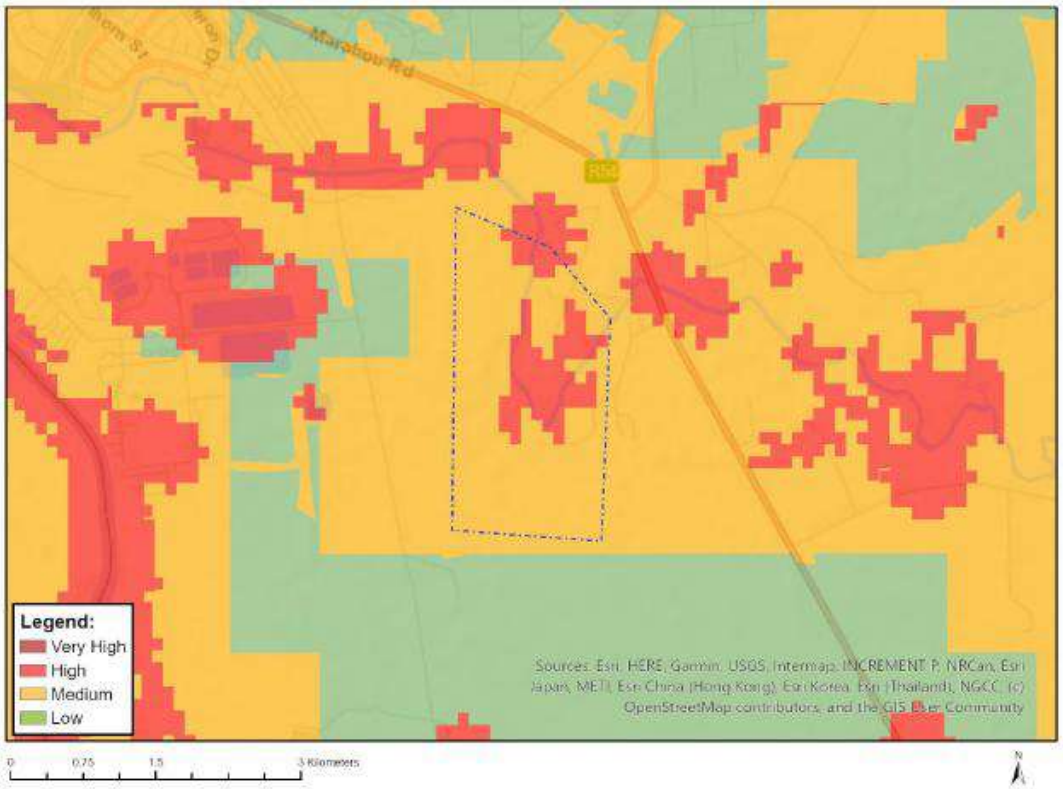
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Wetlands_Floodplain
Very High	Rivers

Figure 6: Aquatic biodiversity theme sensitivity according to the Screening Tool

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

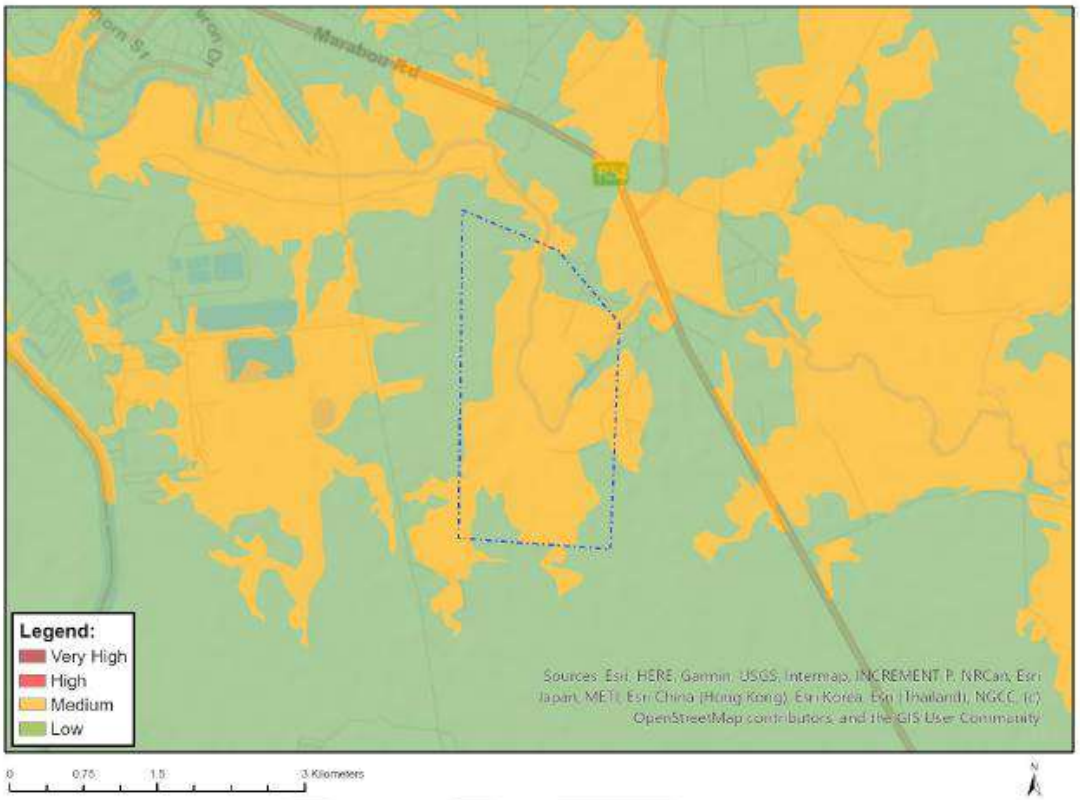
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus ranivorus
High	Aves-Hydroprogne caspia
High	Aves-Mycteria ibis
Medium	Insecta-Lepidochrysops procera
Medium	Insecta-Orachrysops mijburghi
Medium	Mammalia-Hydrictis maculicollis

Figure 7: Animal species theme sensitivity according to the Screening Tool

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Delosperma macellum
Medium	Sensitive species 691

Figure 8: Plant species theme sensitivity according to the Screening Tool

3.4 VEGETATION

South Africa has been recognized as having remarkable plant diversity with high levels of endemism. South Africa hosts a wide range of ecosystems, including nine biomes, namely the Fynbos, Succulent Karoo, Desert, Nama-Karoo, Grassland, Savanna, Albany Thicket, Indian Ocean Coastal Belt and Forest Biomes (Mucina & Rutherford, 2006). The project area is situated in the Grassland biome (Mucina &

Rutherford, 2006), which is characterised by herbaceous vegetation of relatively short and simple structure that is dominated by graminoids, usually of the family Poaceae. Woody plants are rare (usually low to medium-sized shrubs) or absent or are confined to specific habitats, such as smaller escarpments or koppies. Core grassland areas usually have deep, fertile soils although a wide spectrum of soil types occurs. Precipitation is strongly seasonal, and the growing season lasts approximately half the year (Mucina & Rutherford, 2006).

The project area overlaps the **Soweto Highveld Grassland** and the **Central Free State Grassland** vegetation units (Figure 9) (Mucina *et al*., 2018). The Soweto Highveld Grassland vegetation unit is characterised as gently to moderately undulating landscape on the Highveld plateau, supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus* muticus, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. The National Biodiversity Assessment lists this vegetation unit as Vulnerable, and the protection level is Not protected (SANBI, 2018). National land cover data show that Soweto Highveld Grassland has experienced extensive spatial declines of approximately 61% since 1750. Soweto Highveld Grassland is narrowly distributed with high rates of habitat loss in the past 28 years (1990-2018), placing the ecosystem type at risk of collapse (DFFE, 2022).

The Central Free State Grassland vegetation unit is characterised by undulating plains supporting short grassland, in natural condition dominated by *Themeda triandra* while *Eragrostis curvula* and *E. chloromelas* become dominant in degraded habitats. Dwarf karoo bushes establish in severely degraded clayey bottomlands. Overgrazed and trampled low-lying areas with heavy clayey soils are prone to *Vachellia karroo* encroachment. The National Biodiversity Assessment lists this vegetation unit as Least Concern, and the protection level is Poorly protected (SANBI, 2018).

3.5 GEOLOGY AND SOIL

Soweto Highveld Grassland

Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types (SANBI, 2018).

Central Free State Grassland

Sedimentary mudstones and sandstone mainly of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup) as well as those of the Ecca Group (Karoo Supergroup) found in the extreme northern section of this grassland, giving rise to vertic, melanic and red soils (typical forms are Arcadia, Bonheim, Kroonstad, Valsrivier and Rensburg)—typical of Dc land type (dominating the landscape). The less common intrusive dolerites of the Jurassic Karoo Dolerite Suite support dry clayey soils typical of the Ea land type (SANBI, 2018).

3.5.1 Critical Biodiversity Areas and Ecological Support Areas

CBAs are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. ESAs are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of CBAs and/or in delivering ecosystem services. CBAs and ESAs may be terrestrial or aquatic.

The primary purpose of a map of CBAs and ESAs is to guide decision-making about where best to locate development. It should inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. It is the biodiversity sector's input into multi-sectoral planning and decision-making processes (SANBI Biodiversity Advisor, 2017).

According to the Critical Biodiversity Areas (CBA) map, the central pin for the proposed lodge is positioned adjacent to a Terrestrial CBA 1. Depending on the final layout, the development footprint may fall partially or entirely within this sensitive area (**Error! Reference source not found.**) (North West Province of Rural, Environment and Agriculture Department, 2015).

3.5.2 Key Biodiversity Areas

Key Biodiversity Areas are 'sites that contribute significantly to the global persistence of biodiversity', which means they are the most important places in the world for species and their habitats – whether these be in terrestrial, freshwater, estuarine or marine ecosystems (SANBI, 2025)

The project area is 21 km south-west of the Suikerbosrand KBA (Figure 11). Given this distance, the proposed development will not have any direct impact on the KBA.

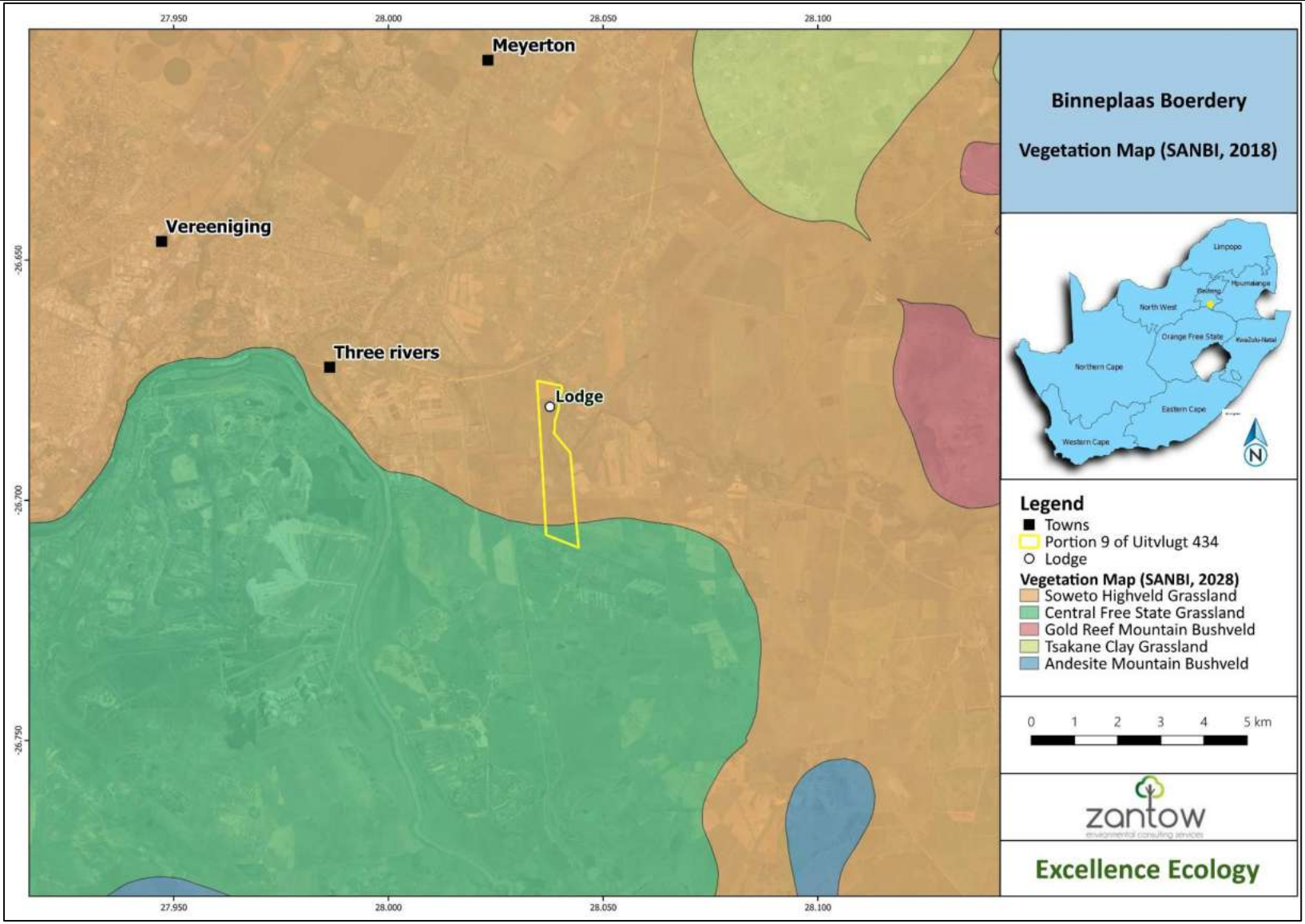


Figure 9: Vegetation Map (SANBI, 2018)

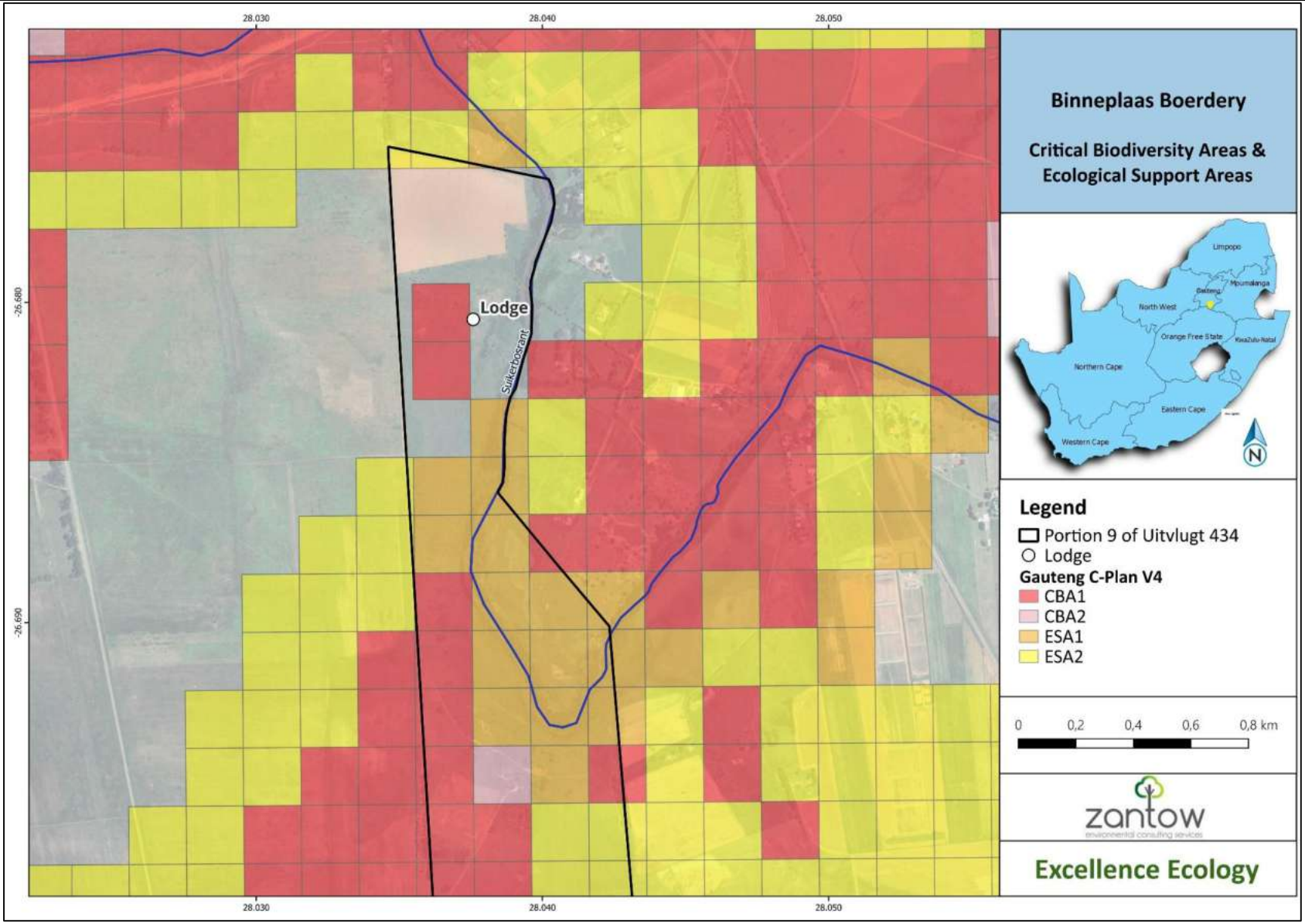


Figure 10: Terrestrial Critical Biodiversity Areas Map

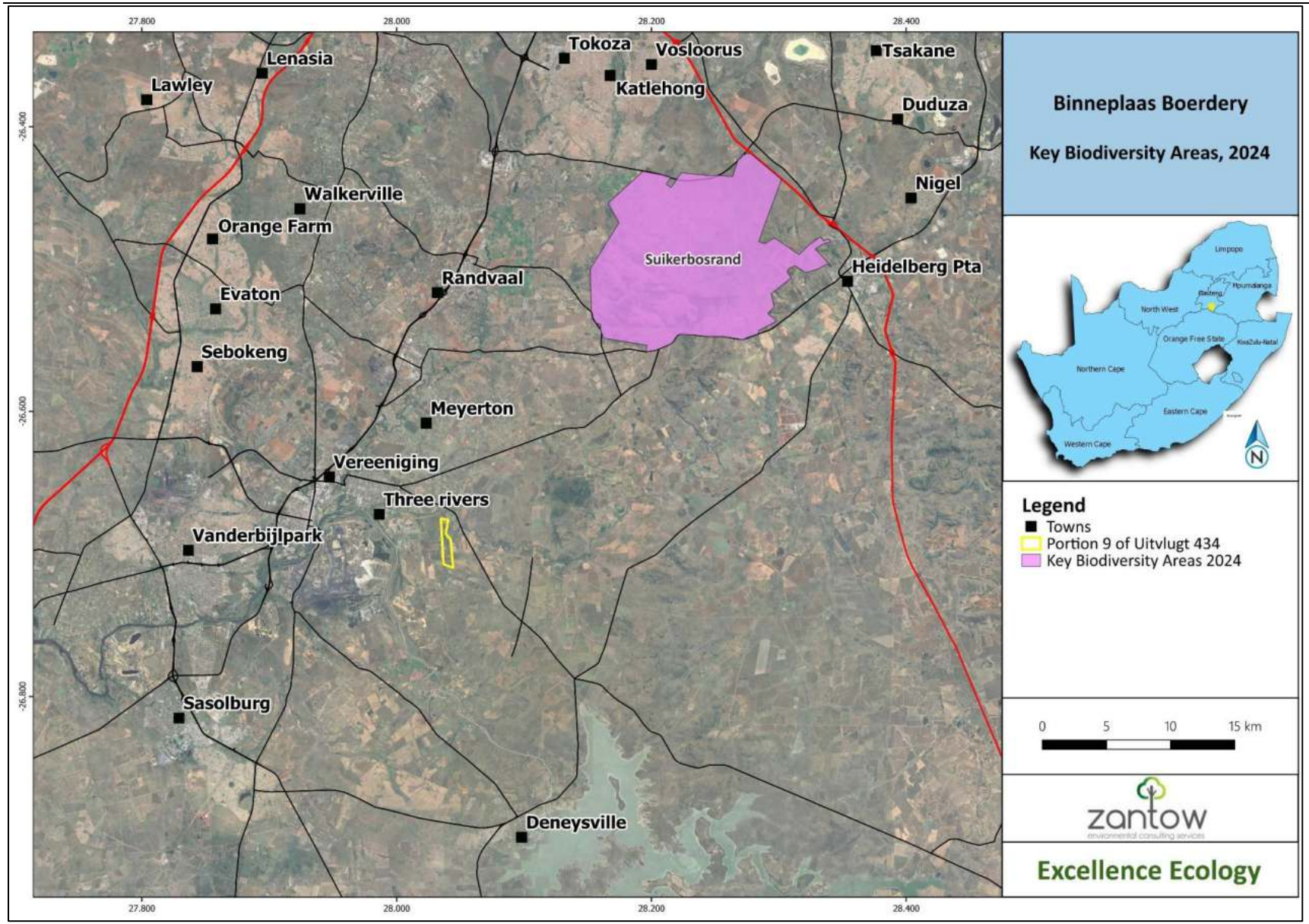


Figure 11: Key Biodiversity Areas (SANBI, 2024)

3.5.3 Protected Areas (PA) and National Protected Area Expansion Strategy (NPAES)

Officially protected areas, whether provincially or nationally designated, that occur near a project site may be affected by project-related activities. The National Protected Area Expansion Strategy (NPAES) sets targets for the expansion of protected areas, identifies priority areas for conservation, and provides recommendations on mechanisms to achieve protected area expansion.

The project area does not fall within any National Protected Areas. It is located approximately 20 km north-east of the Suikerbosrand Provincial Nature Reserve and about 16 km south-east of the Vaaldam Nature Reserve. However, the site is situated within a National Protected Area Expansion Strategy (NPAES) Focus Area (Figure 12).

3.5.4 Nationally threatened ecosystems

NEM:BA provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.

The list of Threatened Ecosystems was published in 2011 (SANBI, 2011). This dataset has been refined and replaced by the Red List of Ecosystems (RLE) for terrestrial realm for South Africa – remnants (2022). This dataset contains the current remaining natural extent (circa 2018) of each of the 458 ecosystem types assessed. This means that those portions of ecosystems that have been lost to anthropogenic activities such as mining or croplands are excluded and only the remnants are part of the dataset (SANBI, 2022).

The project area is located in the Vulnerable Soweto Highveld Grassland (SANBI, 2021) (Figure 13).

3.5.5 Water Management Area and Quaternary Catchment

The project area is located in the Vaal-Orange Water Management Area (WMA) and the C21G Quaternary Catchment.

3.5.6 National Freshwater Ecosystem Priority Areas (NFEPAs) and National Wetland Map 5

South Africa's freshwater ecosystems are diverse, ranging from sub-tropical in the north-eastern part of the country, to semi-arid and arid in the interior, to the cool and temperate rivers of the fynbos. "Freshwater ecosystems" refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries. Consistent with global trends, high levels of threat have been reported for freshwater ecosystems. According to the National Biodiversity Assessment

2018 nearly 80% of inland wetland ecosystem types in South Africa are threatened and approximately 75% of inland wetland ecosystem types are both threatened and under-protected (SANBI, 2019). South Africa's freshwater fauna also displays high levels of threat: at least one third of freshwater fish indigenous to South Africa are reported as threatened, and a recent southern African study on the conservation status of major freshwater-dependent taxonomic groups (fishes, molluscs, dragonflies, crabs and vascular plants) reported far higher levels of threat in South Africa than in the rest of the region.

Urgent attention is needed to ensure that we conserve some representative natural examples of the different ecosystems that make up the natural heritage of this country for current and future generations. NFEPA responds to this need, providing strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources (Driver *et al*., 2011)

The National Wetland Map version 5 (NWM5) shows the distribution of inland wetland ecosystem types across South Africa and includes estuaries and the extent of some rivers (CSIR, 2018).

The footprint of the proposed lodge falls within an NWM6 wetland and is located adjacent to a NFEPA-designated wetland and NFEPA river (Figure 14).

3.6 Strategic Water Source Areas (SWSA)

Water source areas are those areas that supply a disproportionate amount of mean annual runoff to a geographical region of interest. SWSA are those that supply substantial downstream economies and urban centres. These water source areas are vital to the national economy (Nel *et al.*, 2013).

The project area is not located in or close to a SWSA. It is approximately 43 km south-east of the Far West Karst Region groundwater SWSA.

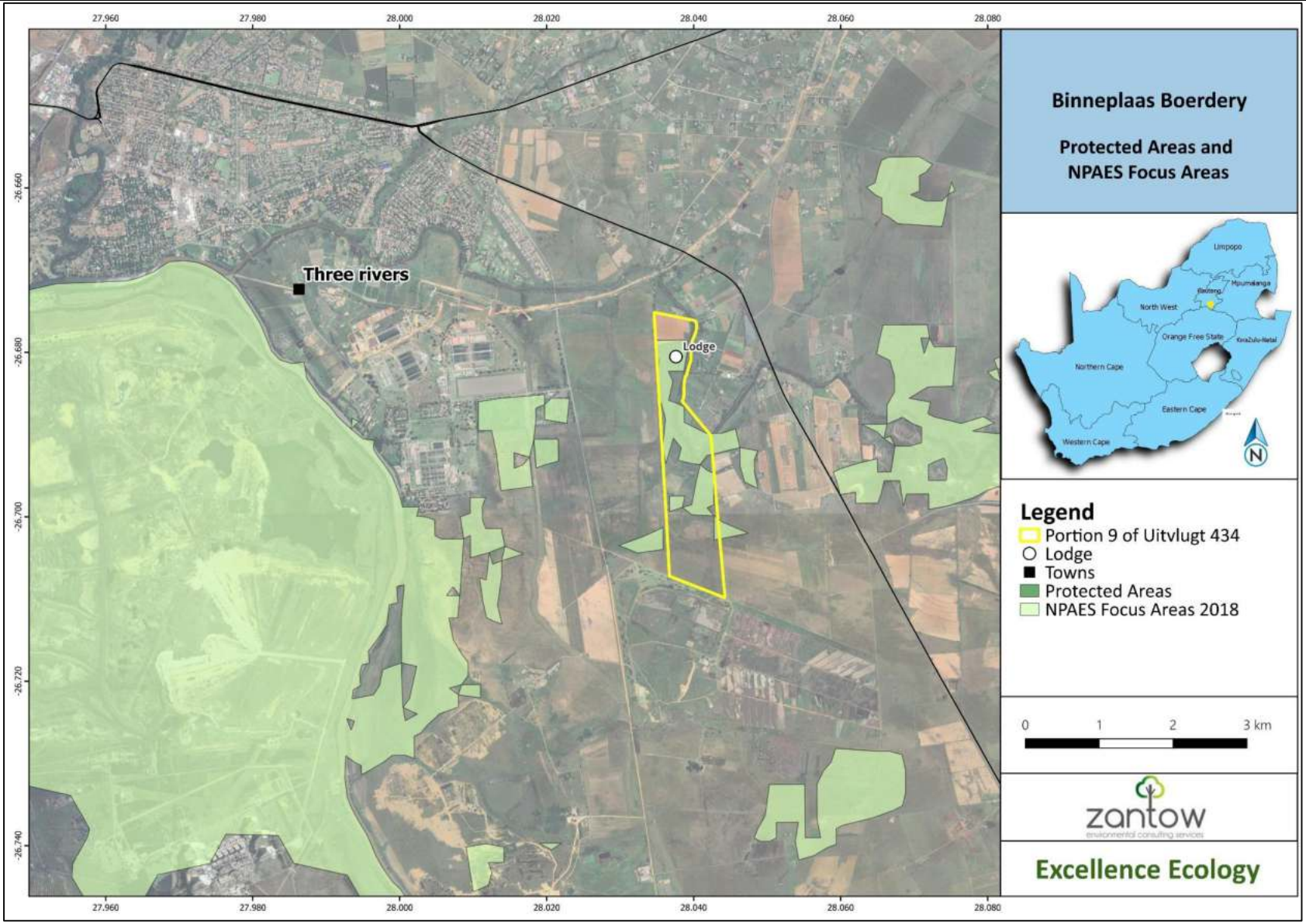


Figure 12: Protected Areas and Protected Areas Expansion Strategy Focus Areas

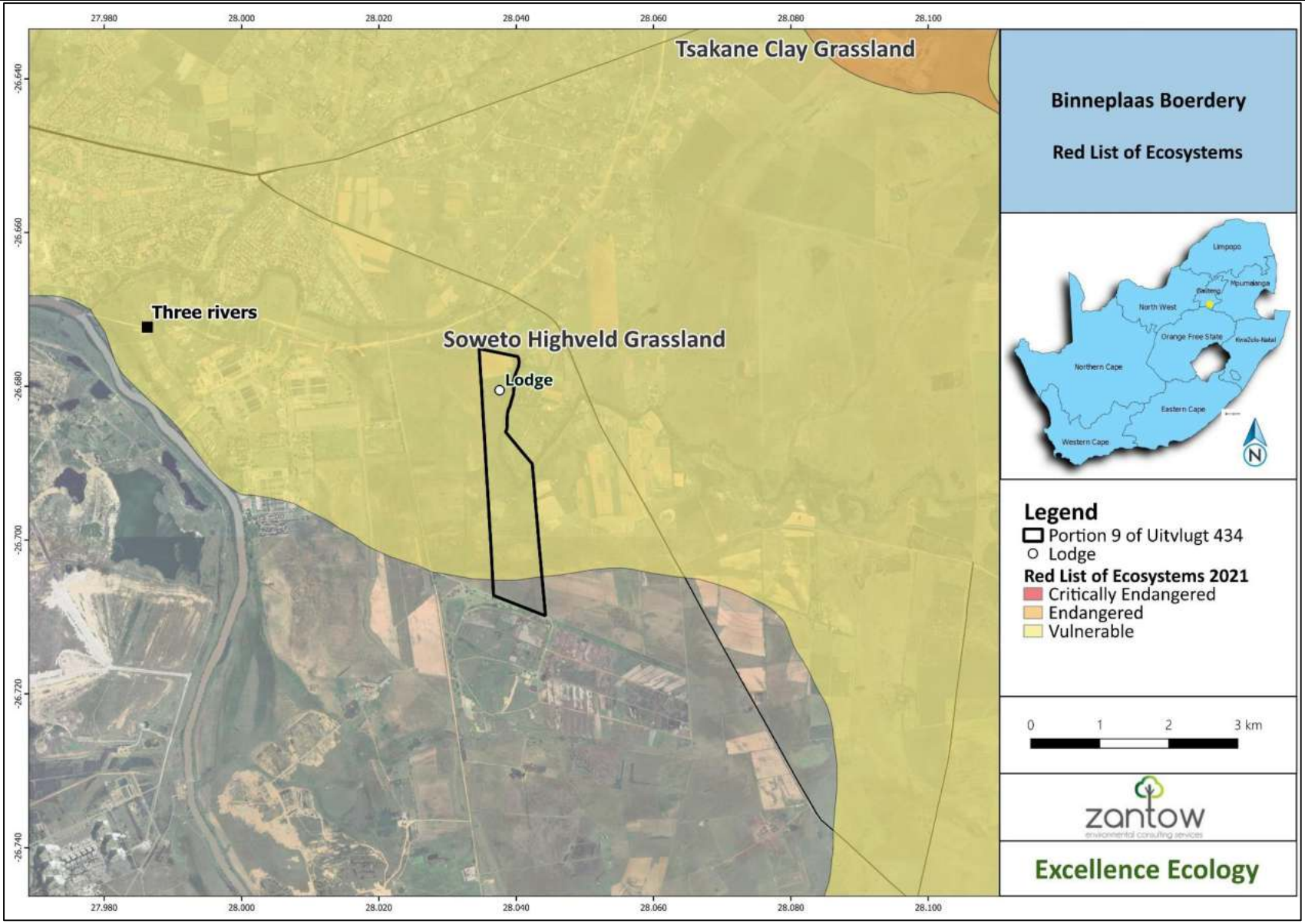


Figure 13: Red list of Ecosystems (2021)

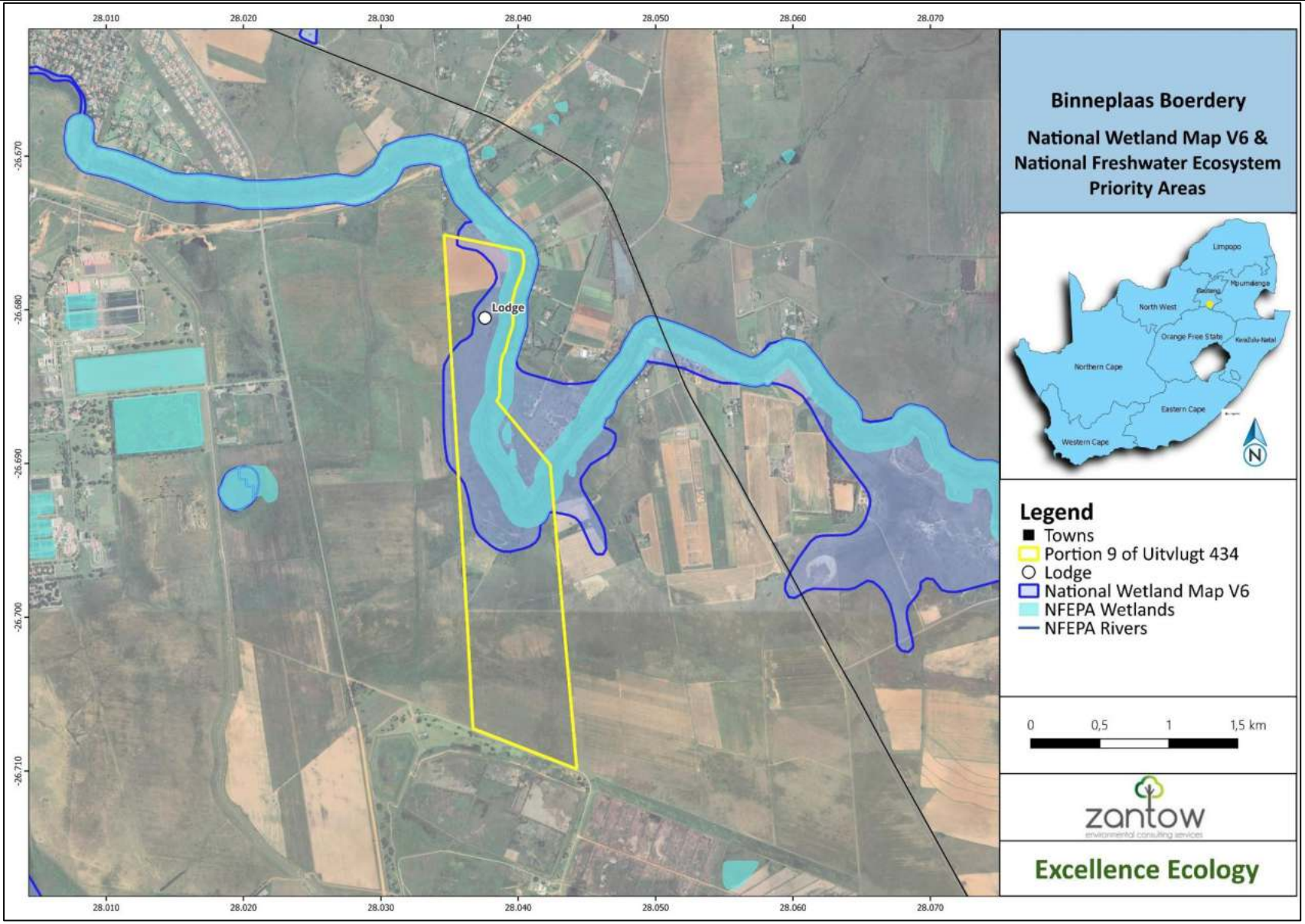


Figure 14: National Wetland Map 6 and National Freshwater Ecosystem Priority Areas wetlands and rivers

4 RESULTS

4.1 VEGETATION DESCRIPTION

There are two vegetation units in the project area namely *Themeda triandra – Ziziphus zeyheriana* grassland and wetlands.

4.1.1 *Themeda triandra – Ziziphus zeyheriana* grassland

The area where the lodge is proposed to be developed is rocky grassland with scattered trees. It is currently used for cattle grazing. The unit has been disturbed to some extent by cattle grazing, but it is likely primary grassland, as no signs of historical cultivation have been recorded. Dominant grass species include *Themeda triandra, Melinis repens* and *Eragrostis chloromelas*. Dominant trees include *Vachellia karroo* and *Searsia pyroides* and dominant shrubs include *Ziziphus zeyheriana* and *Seriphium plumosum*. Dominant forbs recorded include *Ledebouria* spp., *Hypoxis hemerocallidea, Hilliardiella oligocephala* and *Helichrysum rugulosum*.

No plant species of conservation concern (SCC) or protected trees were recorded in this unit. Three species endemic to South Africa were recorded in this unit namely *Hermannia transvaalensis, Ledebouria ovalifolia and Trachyandra erythrorrhiza.* This unit has a high sensitivity as it is primary grassland in the Vulnerable Soweto Highveld Grassland.

Figure 15: Rocky grassland

Figure 16: Rocky grassland

4.1.2 Wetlands

Floodplain wetlands are present near the proposed lodge site, with a river and its associated riparian vegetation located further downslope. The lodge footprint has been carefully sited to avoid construction within the wetlands or their designated buffer zones. These aquatic and riparian systems are ecologically sensitive, providing important habitat for flora and fauna, regulating hydrological processes, and contributing to ecosystem services. By excluding development from these areas, the project adopts an avoidance approach to minimise potential impacts on wetland and riparian biodiversity and maintain the integrity of downstream ecological functions.

The floodplain wetlands consist of a dense grass and sedge layer with species such as *Imperata cylindrica, Eragrostis plana, Cyperus esculenthus* and *Cyperus obtusiflorus* var. *flavissimus.* The graminoid *Crinum bulbispermum* was recorded in one of the floodplain wetlands. Forbs include *Ranunculus dregei*, *Haplocarpha scaposa* and *Pentarrhinum insipidum*. The shrub *Asparagus laricinus* is common in the wetland areas. Several invasive plant species were recorded. See Section 4.2.4 for more details on invasive species. No plant species of conservation concern (SCC) or protected trees were recorded in this unit. No endemic species were recorded. This unit has a high sensitivity.

Figure 17: Wetland vegetation

Figure 18: Riparian vegetation

Figure 19: *Crinum bulbispermum*

4.2 PLANT SPECIES LEVEL ASSESSMENT

South Africa has been recognized as having remarkable plant diversity with high levels of endemism.

4.2.1 Protected and endemic species

In this section protected plant species and endemic species recorded in the project area is given, while a complete list of recorded plant species is provided in Appendix B. No national red list species or provincially protected species were recorded. Three species endemic to South Africa were recorded, namely *Hermannia transvaalensis, Ledebouria ovalifolia* and *Trachyandra erythrorrhiza*.

4.2.2 Protected trees

No protected trees were recorded

4.2.3 EIA screening tool listed species (SCC)

The screening tool listed three plant SCC for the project area, namely *Delosperma macellum*, Sensitive species 1252 and Sensitive species 691. None were recorded on site. There is suitable habitat for these species in the project area, there presence is however still unlikely.

4.2.4 Declared invaders

Four alien invader plant species were recorded in the project area:

Table 12: Declared invader plant species recorded in the project area.

Scientific name	Common name	Invader category
Argemone ochroleuca	White-flowered Mexican poppy	1b
Cirsium vulgare	Spear thistle, Scotch thistle	1b
Eucaluptus camaldulensis	River red gum	1b (in grassland and riparian areas)
Morus alba	White mulberry	Declared invader 3

Category 1 plants are prohibited plants which must be controlled or eradicated. These plants serve no economic purpose and possess characteristics that are harmful to humans, animals or the environment.

Category 1a: Plants are high-priority emerging species requiring compulsory control. All breeding, growing, moving and selling are banned.

Category 1b: Plants are widespread invasive species controlled by a management program.

Category 2 plants are invaders with certain useful qualities, such as commercial use or for woodlots, animal fodder, soil stabilisation, etc. These plants are allowed in demarcated areas under controlled conditions and in biocontrol reserves.

Category 3 plants are alien plants that are currently growing in, or have escaped from areas such as gardens, but that are proven invaders. No further planting is allowed (except with special permission), nor trade in propagative material. Existing plant may remain but must be prevented from spreading. Plants within the flood line and watercourses must be removed (Bromilow, 2010).

4.3 FAUNA IN AND AROUND THE PROJECT AREA

4.3.1 Fauna habitat types

The number of mammal species supported by a plant community depends on several factors like the primary production, seasonal availability of resources, floral heterogeneity, diversity of plant structure, nature of the substratum and previous history (Delany, 1982). Each mammal species has a particular niche, which can be regarded as the sum of all ecological requirements of a species namely food, space, shelter and physical conditions. Mills & Hes (1997) stated that the distribution and abundance of animal species does not rigorously follow that of plant communities or biomes. Instead, mammal species seem to have certain preferences for a specific habitat type (Skinner & Smithers, 1990).

A survey was conducted during November 2025 to identify specific fauna habitats, and to compare these habitats with habitat preferences of the different fauna groups (birds, mammals, reptiles, amphibians) occurring in the quarter degree grid.

The following habitat types were identified:

- Rocky grassland
- Wetlands and riparian vegetation

4.3.2 Fauna Species of Conservation Concern

Species of Conservation Concern (SCC) are listed if they have been recorded in the region on iNaturalist and SABAP2 and also if they were flagged by the EIA Screening Tool Report for the project area. An indication is given whether suitable habitat is present at the project area and the likelihood of it occurring there according to Child *et al*. (2016) and Taylor *et al*. (2015). Only Species of Conservation Concern is included in this part (Table 13). For a complete list of species recorded in the region, see Appendix C.

Red list categories are as follows:
CR: Critically Endangered, indicating that the species is facing an extremely high risk of extinction.
EN: Endangered, indicating that the species is facing a very high risk of extinction.
VU: Vulnerable, indicating that the species is facing a high risk of extinction.
NT: Near Threatened, is likely to become at risk of extinction in the near future.
Declining: A species is Declining when there are threatening processes causing a continuing decline of the species.
LC: Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are typically classified in this category.

Table 13: Likelihood of species of conservation concern to be present at site (Screening tool, SABAP2 and iNaturalist)

Scientific name	English name	Habitat	Suitable habitat on-site	Likelihood of occurrence
Mammals				
Kobus leche (NT)	Lechwe	Lechwe are found in marshy areas where they are an important herbivore of aquatic plants, as well as grasses that are found in flooded meadows.[	No	Low
Hippotragus niger (VU)	Sable Antelope	The Sable Antelope (*Hippotragus niger*) is an "edge" species typically associated with woodland–grassland ecotones (Cain *et al*. 2012). It is a selective grazer that favours fresh grass growth between 40–140 mm and depends on regular access to drinking water, usually visiting water sources every 2–4 days (Cain *et al*. 2012). Key dry-season resource areas include recently burned patches that provide green regrowth and vleis (Parrini & Owen-Smith 2010). Important forage species include *Panicum maximum* and *Themeda triandra* (Parrini 2006), although the species shows broad dietary acceptance for grasses such as *Brachiaria nigropedata, Heteropogon contortus, Digitaria* spp., and *Eragrostis* spp. (Grobler 1981).	Yes	Confirmed not to be present
Hydrictis maculicollis (VU)	Spotted-necked Otter	The Spotted-necked Otter (*Hydrictis maculicollis*) primarily inhabits freshwater ecosystems characterized by clear, unpolluted water with minimal siltation and abundant small fish populations—conditions considered essential for supporting their foraging requirements (Perrin & Carugati 2000a; d'Inzillo Carranza & Rowe-Rowe 2013). Despite this, recent observations indicate a higher tolerance to degraded conditions than previously assumed. The species has been recorded, and at times appears relatively common, in moderately polluted river	Yes	Likely. The landowner has heard otters in the region.

Scientific name	English name	Habitat	Suitable habitat on-site	Likelihood of occurrence
		systems such as the Braamfonteinspruit, Jukskei River, Blesbokspruit (Gauteng Province), and sections of the Vaal River (Power 2014; Ponsonby, in prep.). Further research is required to determine the specific water-quality thresholds at which local otter densities begin to decline. Spotted-necked Otters have home ranges estimated between 5.9–27.4 km², typically encompassing an average of 14.8 km of river frontage (Perrin *et al*. 2000). They are highly aquatic compared to the sympatric Cape Clawless Otter, occurring singly most often, though small groups of up to five individuals may be observed (Skinner & Chimimba 2005). Their activity patterns are predominantly diurnal, which further distinguishes them from other otter species (Perrin & d'Inzillo Carranza 2000a). Suitable habitat must also include well-developed riparian vegetation, such as tall grasses, reeds, or dense shrubs, which provide essential cover—especially during resting periods (Perrin & d'Inzillo Carranza 2000a, 2000b).		
Birds				
Afrotis afraoides (NT)	Northern Black Korhaan	Endemic to southern Africa, it is common in Namibia, Botswana and northern South Africa. It occurs in nama karoo, Kalahari sandveld, dry sandveld, open savanna and grass-covered dunes. It generally prefers heavily grazed areas with sparse ground cover.	Yes	Medium
Anas sparsa sparsa (VU)	Southern African Black Duck	The African Black Duck typically inhabits secluded, shallow, fast-flowing rivers and streams, often found in mountainous and wooded regions. It also frequents more open areas, adapting to slower-moving waters in lakes, lagoons, and reservoirs. Occasionally, it can be spotted in man-made environments such as sewage ponds across broader geographical regions within Africa.	Yes	Medium

Scientific name	English name	Habitat	Suitable habitat on-site	Likelihood of occurrence
Ardea goliath (NT)	Goliath Heron	The Goliath Heron is a very aquatic heron of both coastal and inland habitats, rarely wandering far from water. The shallow water margins of large lakes, lagoons, and large river systems are its favoured habitat. It typically feeds out from shore in deep water and near floating plants. Overall though, it inhabits many types of shallow waters including rivers and lakes, both salt and fresh, marshes and swamps, tidal estuaries, reefs and sometimes mangrove creeks and even water holes in woodland savanna, from sea level to 2,100 m. It is not commonly found around areas of human disturbance.	Yes	Medium
Calidris ferruginea (VU)	Curlew Sandpiper	In the region the Curlew Sandpiper is found at coastal lagoons, estuaries, and sheltered shorelines with abundant stranded algae. Inland, it inhabits wetlands with muddy edges and areas where water levels are receding. The scattered inland distribution of the species suggests that it is less selective in wetland choice compared to other migratory (Underhill 1997).	Yes, marginally	Medium

Scientific name	English name	Habitat	Suitable habitat on-site	Likelihood of occurrence
Circus ranivorus (EN)	African Marsh Harrier	This species is dependent on permanent wetlands, both inland and coastal, for breeding, feeding and roosting. It also hunts over drier floodplains, grasslands, croplands, and Fynbos, where it preys mainly on small rodents (Simmons, 2005e), as well as birds, reptiles, frogs and insects. Nests are usually placed in reedbeds over water, although breeding has been recorded in adjacent sedges, Fynbos, scrub and agricultural fields, but these are considered to be rare occurrences (Kemp & Kemp, 2006).	No	Low
Falco vespertinus (NT)	Red-footed (Western Red-footed) Falcon (Kestrel)	The species roosts communally, congregating in large numbers around traditional roosts (typically tall alien trees in rural towns) at dusk.	Possible	Low
Grus paradisea (NT)	Blue Crane	Blue Cranes are dry-grassland birds, found in open grassland habitats and ecotones between the Grassland and Nama Karoo biomes (Allan, 2005h). They are also commonly found in agricultural landscapes, especially in Western Cape Province.	No	Very low
Hydroprogne caspia (VU)	Caspian Tern	Breeding habitat used along the coast is largely offshore islands with an increasing use of sandy beaches and islands at salt works, where protection is offered (du Toit *et al.,* 2003). Breeding at inland sites takes place on small, low islets in pans and dams. Caspian Terns are intolerant of any form of disturbance while breeding.	No	Very low

Scientific name	English name	Habitat	Suitable habitat on-site	Likelihood of occurrence
Mycteria ibis (EN)	Yellow-billed stork	Yellow-billed Storks forage in a diversity of permanent and seasonal wetland habitats, with open shallow water that is generally free of vegetation (del Hoyo *et al.,* 1992, Hancock *et al.,* 2010). Food includes frogs, small fish and other small aquatic prey (del Hoyo *et al.*, 1992).	No	Very low
Phoenicopterus roseus	Greater Flamingo	The species inhabits shallow (c.1 m deep over a large area) (Snow & Perrins, 1998) eutrophic waterbodies (Hockey *et al*., 2005) such as saline lagoons, saltpans and large saline or alkaline lakes (Brown *et al*., 1982, del Hoyo *et al*., 1992) up to pH 11 (Snow & Perrins, 1998). It will also frequent sewage treatment pans, inland dams (Hockey *et al*., 2005), estuaries (Brown *et al.,* 1982) and coastal waters (Diawara *et al*., 2007), seldom alighting on freshwater but commonly bathing and drinking from freshwater inlets entering alkaline or saline lakes (Brown *et al*., 1982). It nests and roosts on sandbanks (Brown *et al*., 1982, del Hoyo *et al*., 1992), mudflats (del Hoyo *et al*., 1992), islands (Brown *et al*., 1982) or boggy, open shores (Flint *et al.,* 1984)	No	Very low

5 WETLAND ASSESSMENT

5.1 WETLAND DELINEATION, CLASSIFICATION AND DESCRIPTION

The Suikerbosrant River flows through the project area and is a tributary of the Vaal River. Several floodplain wetlands are associated with the river, receiving water both from riverine flooding and runoff from adjacent areas. In total, six floodplain wetlands were delineated within the broader project area (Figure 21).

A floodplain wetland is defined as a wetland area on the mostly flat or gently-sloping land adjacent to and formed by an alluvial river channel, under its present climate and sediment load, which is subject to periodic inundation by overtopping of the channel bank. Floodplain wetlands, as the name implies, generally occur on a plain and are typically characterised by a suite of geomorphological features associated with river-derived depositional processes, including point bars, scroll bars, oxbow lakes and levees. Floodplain wetlands are considered as wetland ecosystems that are distinct from but associated with the adjacent river channel itself, which is classified as a 'river' (Ollis *et al*., 2013).

Figure 20: Suikerbosrant River

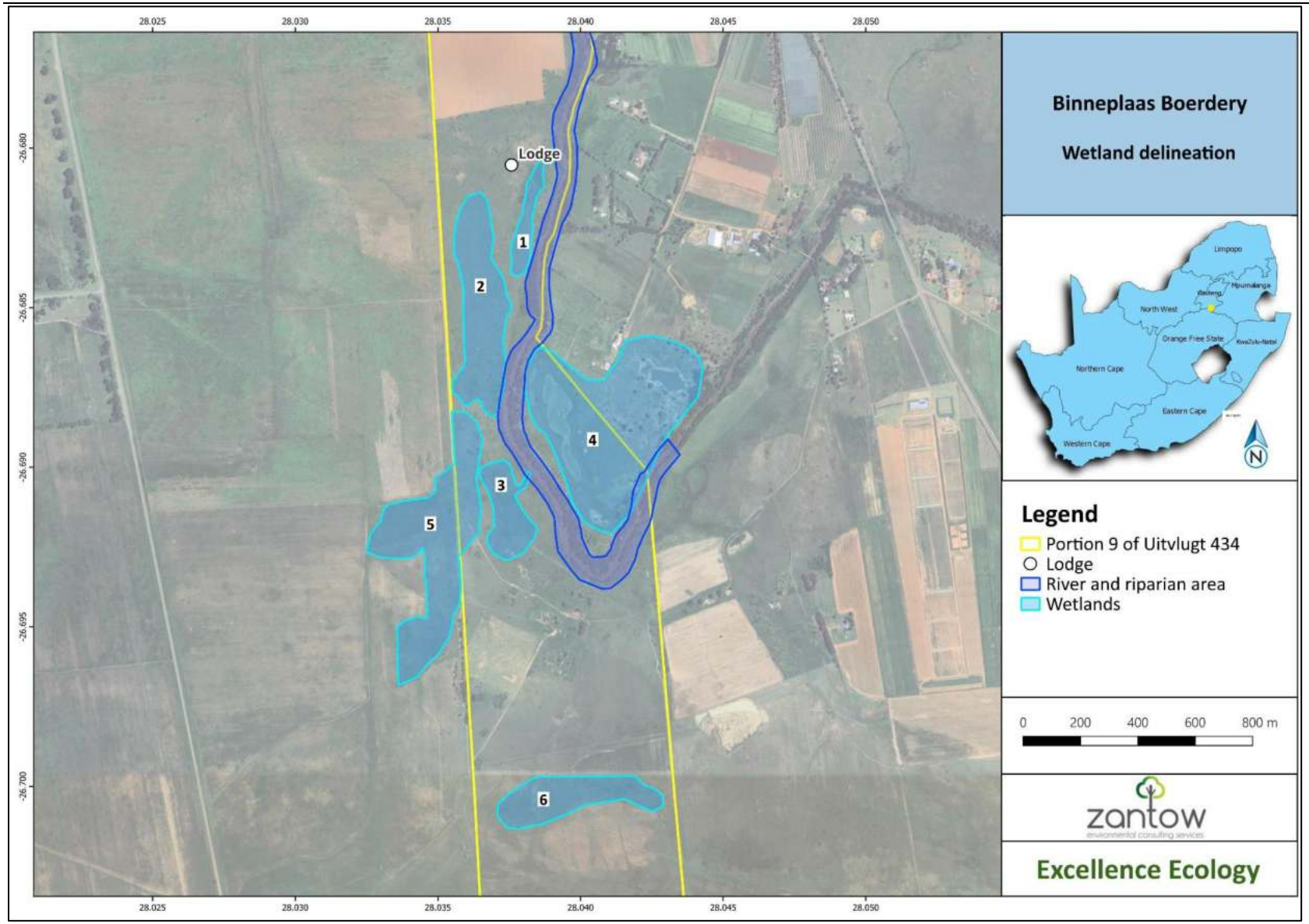


Figure 21: Wetland delineation

Figure 22: Floodplain wetland 1

Figure 23: *Crinum bulbispermum* in FP wetland 1

Figure 24: Dark clayey soil in FP wetland 1

Figure 25: FP wetland 2

Figure 26: *Imperata cylindrica* in FP wetland 3

Figure 27: Wetland 5

Table 14: Description of wetlands on site

FEATURE	Suikerbosrant River	Floodplain wetlands
Catchment Features and Current Impacts	The catchment area of the river is predominantly used for cattle grazing and crop production.	The catchment area of the river is predominantly used for cattle grazing and crop production.
Wetland Type	River	Floodplain wetlands
Vegetation Characteristics	Riparian vegetation consists of a tree layer with species such as *Searsia pyroides, Salix babylonica* and *Morus alba*	Vegetation consists of sedges (Cyperaceae), wetland grasses such as *Imperata cylindrica* and *Eragrostis plana* and forbs such as *Ranunculus dregei* and *Persicaria decipiens.*
Algae Presence	Yes	No
Depth Characteristics	1 – 2 m estimated	0 - 10 cm
Flow Conditions	Moderate flow	No flow
Water Clarity	Turbid	Turbid (disturbed by grazing))
Soil characteristics	Sandy soil	Soil sandy to clayey

5.2 WETLAND INTEGRITY ASSESSMENTS (WET-HEALTH ASSESSMENT)

In determining the integrity of the wetland, the condition of the site and the indirect and direct disturbances are considered. The roads, alien invasive vegetation species, pollution, sedimentation and density roughness elements were taken into account in determining the PES and EIS of the wetland units on site.

Four modules, namely hydrology, geomorphology, water quality and vegetation, were assessed as a single unit for the HGM Units and subsequently an area weighted score was obtained for the HGM Units. The potential impacts of activities such as agriculture, drought and altered hydrological functions within the greater catchment were taken into consideration during the assessment. The results are summarised in Tables below.

Table 15: Present Ecological state (PES) of river and riparian area

Final PES Scores				
PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	1,3	0,7	2,8	3,0
PES Score (%)	87%	93%	72%	70%
Ecological Category	**B**	**A**	**C**	**C**
Combined Impact Score	1,9			
Combined PES Score (%)	81%			
Combined Ecological Category	**B**			
Hectare Equivalents	15,9 Ha			

The section of the Suikerbosrant River which is in the project area, has a PES score of B: Largely natural with few modifications, but with some loss of natural habitats.

Table 16: Present Ecological state (PES) of FP wetland 1 and 2

Final PES Scores				
PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	1,5	0,9	3,0	4,0
PES Score (%)	85%	91%	70%	60%
Ecological Category	**B**	**A**	**C**	**D**
Trajectory of change				
Confidence (revised results)	Not rated	Not rated	Not rated	Not rated
Combined Impact Score	2,3			
Combined PES Score (%)	77%			
Combined Ecological Category	**C**			
Hectare Equivalents	1,6 Ha			

FP wetland 1 has a PES score of C: Moderately modified. This means that the wetland is moderately modified, but with some loss of natural habitats.

Table 17: Present Ecological state (PES) of FP wetland 3

Final PES Scores				
PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	1,5	0,9	3,0	4,0
PES Score (%)	85%	91%	70%	60%
Ecological Category	**B**	**A**	**C**	**D**
Combined Impact Score	2,2			
Combined PES Score (%)	78%			
Combined Ecological Category	**C**			
Hectare Equivalents	3,1 Ha			

FP wetland 3 has a PES score of C: Moderately modified. This means that the wetland is moderately modified, but with some loss of natural habitats.

Table 18: Present Ecological state (PES) of FP wetlands 5 and 6

Final (adjusted) Scores				
PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	3,7	3,2	2,8	6,0
PES Score (%)	63%	68%	72%	40%
Ecological Category	**C**	**C**	**C**	**E**
Combined Impact Score	3,9			
Combined PES Score (%)	61%			
Combined Ecological Category	**C**			
Hectare Equivalents	9,5 Ha			

FP wetlands 5 and 6 has a PES score of C: Moderately modified. This means that the wetland is moderately modified, but with some loss of natural habitats.

5.3 Ecological Importance and Sensitivity

The EIS assessment was applied to the UVB wetlands within the development area in order to ascertain the levels of sensitivity and ecological importance thereof. The results are summarised in Table 19 below.

Table 19: EIS scores obtained for the Suikerbosrant River

		Present State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	0,9	0,6	0,0	Very Low
	Stream flow regulation	0,0	0,0-	0,0	Very Low
	Sediment trapping	1,5	2,0	1,0	Low
	Erosion control	1,3	0,6	0,1	Very Low
	Phosphate assimilation	1,5	0,0	0,0	Very Low
	Nitrate assimilation	1,3	0,0	0,0	Very Low
	Toxicant assimilation	1,5	0,0	0,0	Very Low
	Carbon storage	1,9	2,7	1,7	Moderate
	Biodiversity maintenance	3,2	1,0	2,2	Moderate
PROVISIONING SERVICES	Water for human use	3,0	0,7	1,8	Moderate
	Harvestable resources	2,5	0,0	1,0	Low
	Food for livestock	0,5	0,3	0,0	Very Low
	Cultivated foods	1,4	0,0	0,0	Very Low
CULTURAL SERVICES	Tourism and Recreation	2,6	0,0	1,1	Low
	Education and Research	1,5	0,0	0,0	Very Low
	Cultural and Spiritual	3,0	0,0	1,5	Moderately Low

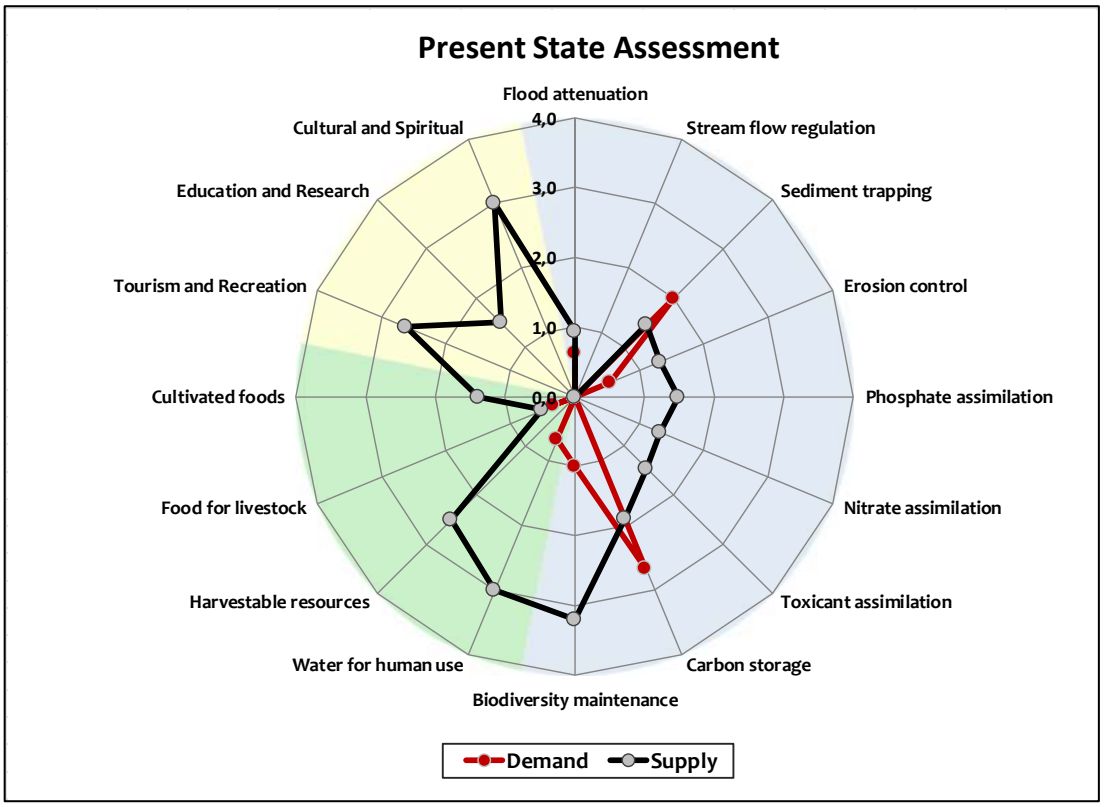


Figure 28: Suikerbosrant River EIS graph

Table 20: EIS scores obtained for FB wetlands

		Present State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	0,0	0,0	0,0	Very Low
	Stream flow regulation	0,0	0,0	0,0	Very Low
	Sediment trapping	1,0	0,0	0,0	Very Low
	Erosion control	1,1	0,3	0,0	Very Low
	Phosphate assimilation	1,0	0,0	0,0	Very Low
	Nitrate assimilation	0,9	0,0	0,0	Very Low
	Toxicant assimilation	1,0	0,0	0,0	Very Low
	Carbon storage	1,3	2,7	1,2	Low
	Biodiversity maintenance	2,3	1,0	1,3	Moderately Low
PROVISIONING SERVICES	Water for human use	0,6	0,0	0,0	Very Low
	Harvestable resources	1,5	0,0	0,0	Very Low
	Food for livestock	2,3	0,0	0,8	Very Low
	Cultivated foods	1,8	0,0	0,3	Very Low
CULTURAL SERVICES	Tourism and Recreation	0,8	0,0	0,0	Very Low
	Education and Research	0,0	0,0	0,0	Very Low
	Cultural and Spiritual	1,0	0,0	0,0	Very Low

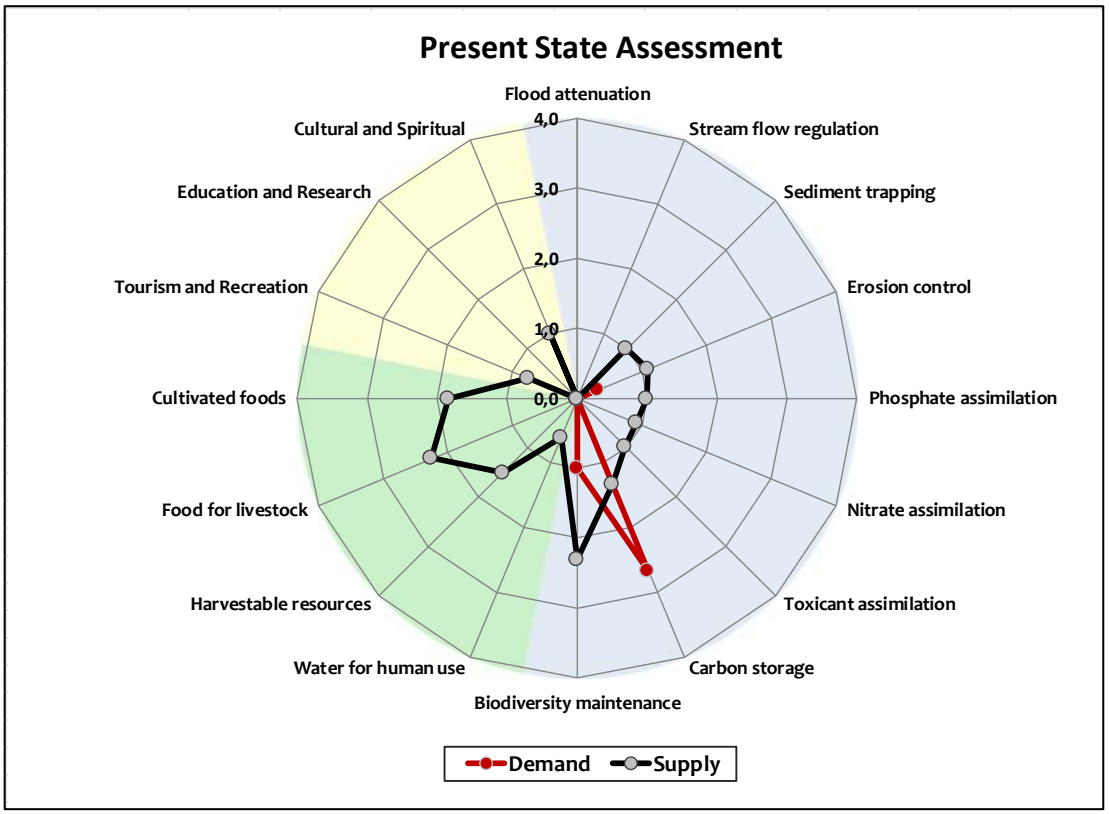


Figure 29: FB wetlands EIS graph

The Suikerbosrant River has an EIS of 2.2: Moderate and the Floodplain wetlands has an EIS of 1.3: Moderately low.

5.4 WETLAND BUFFER

Wetland buffers were calculated using "Buffer Zone Guidelines for Wetlands, Rivers and Estuaries Part 2: Practical Guide. WRC Report No. TT 715/2/17" by Macfarlane & Bredin (2017). The calculated buffer is 17 m for the Suikerbosrant River and 23 m for the floodplain wetlands (Figure 30).

5.5 SUMMARY OF WETLAND ASSESSMENT

The wetland assessment is summarised in the table below:

Table 21: Summary of wetland assessment

Classification	PES	EIS	REC	Buffer
River	B: Largely natural	Moderate	B: Maintain	23 m
Floodplain wetlands 1,2,3,5 and 6	C: Moderately modified	Moderately low	C: Maintain	17 m

5.6 RISK ASSESSMENT MATRIX

The Risk Assessment Matrix is given in the table below.

Risks were rated as if all mitigation measures are implemented. All risks have a low sensitivity (Figure 30: Wetland delineation with buffers
Table 22). See Section 7 for impacts and recommended mitigation measures.

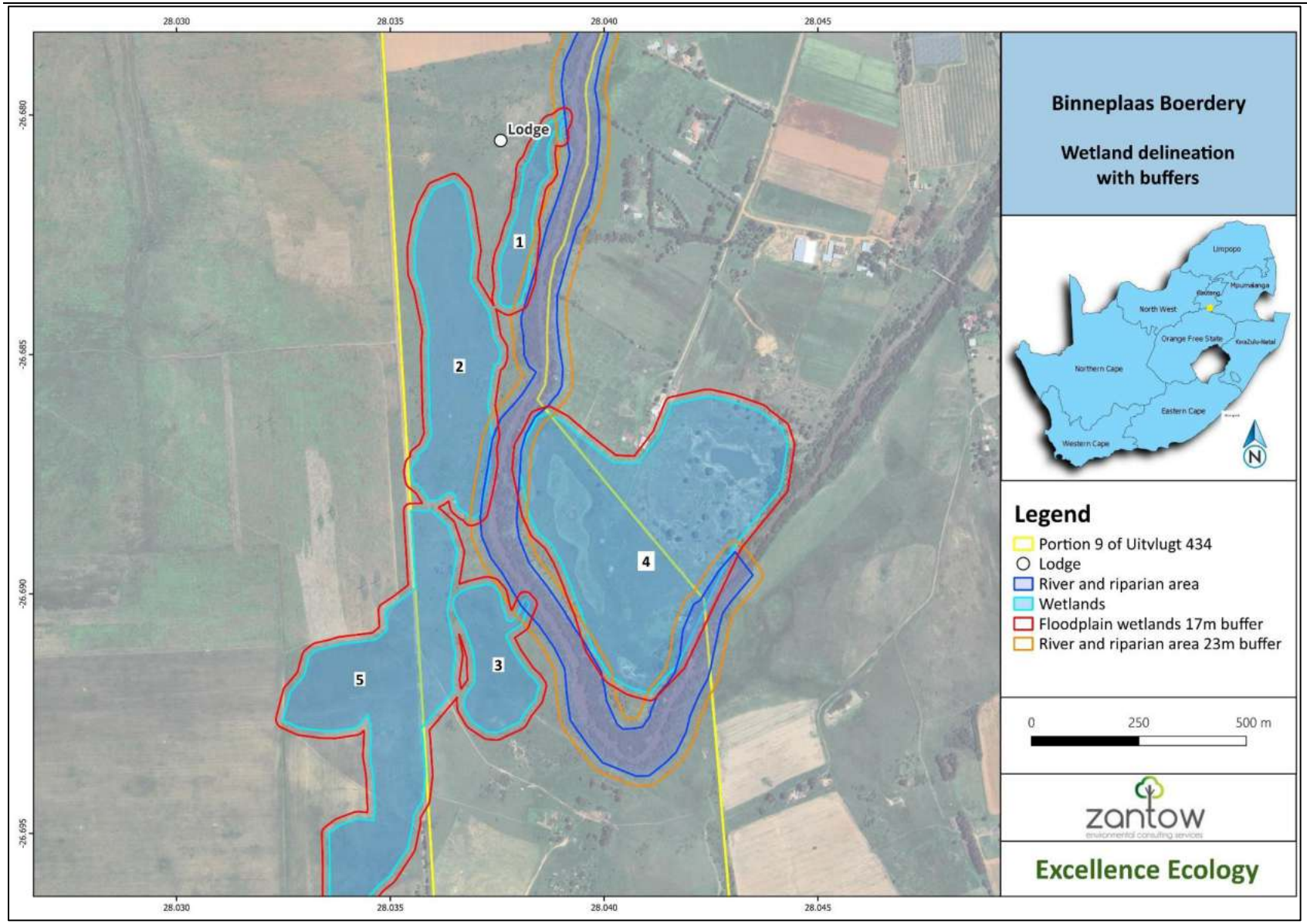


Figure 30: Wetland delineation with buffers

Table 22: Risk Assessment Matrix

Phase	Activity	Impact	Potentially affected watercourses	Significance (max = 100)	Risk Rating	Confidence level
			Name/s			
CONSTRUCTION	<1> Construction of lodge outside of wetlands and their associated buffers	<1a> Disturbance of wetlands	Floodplain wetlands	**12,8**	**L**	High
		<1b>Sedimentation in wetlands	Suikerbosrant River	**8,4**	**L**	High
			Floodplain wetlands	**12,8**	**L**	High
		<1c>Water and soil pollution by heavy vehicles: hydrocarbons etc.	Suikerbosrant River	**8,4**	**L**	High
			Floodplain wetlands	**12,8**	**L**	High
		<1d>Spread and increase in Invasive Alien Vegetation	Suikerbosrant River	**8,4**	**L**	High
			Floodplain wetlands	**12,8**	**L**	High
OPERATIONAL	<1>Operation of lodge	<1a>Disturbance of wetlands and riparian area vegetation and fauna	Suikerbosrant River	**21,6**	**L**	High
			Floodplain wetlands	**16**	**L**	High
		<2b>Spread and increase in Invasive Alien Vegetation	Suikerbosrant River	**16,8**	**L**	High
			Floodplain wetlands	**12,8**	**L**	High

6 SENSITIVITY ANALYSIS

The Screening Tool Sensitivities were verified and mapped (Table 23, Figure 31 - Figure 34).

Table 23: Screening Tool Sensitivity Verification

Theme	DFFE Screening Tool Report Sensitivity	Specialist Sensitivity	Rating Confirmed/disputed and Reasons
Terrestrial Biodiversity	Very High	Very High	Confirmed The area where the lodge is proposed consists of primary grassland of the Vulnerable Soweto Highveld Grassland
Aquatic Biodiversity	Very high	Low to Very high	Confirmed The riparian area and the floodplain wetlands have a very high aquatic sensitivity. Grassland areas have a low aquatic biodiversity sensitivity.
Animal Species	High	Low to High	Confirmed The spotted-necked otter is likely to be present next to the Suikerbosrant River. Some other fauna SCC may be present at the river, while the area where the lodge is proposed no fauna SCC were recorded or are likely to be present and therefore it has a low sensitivity for Animal Species.
Plant Species	Medium	Medium to Low	Disputed No plant Species of Conservation Concern (SCC) were recorded, there ais suitable habitat for plant SCC in the riparian area.

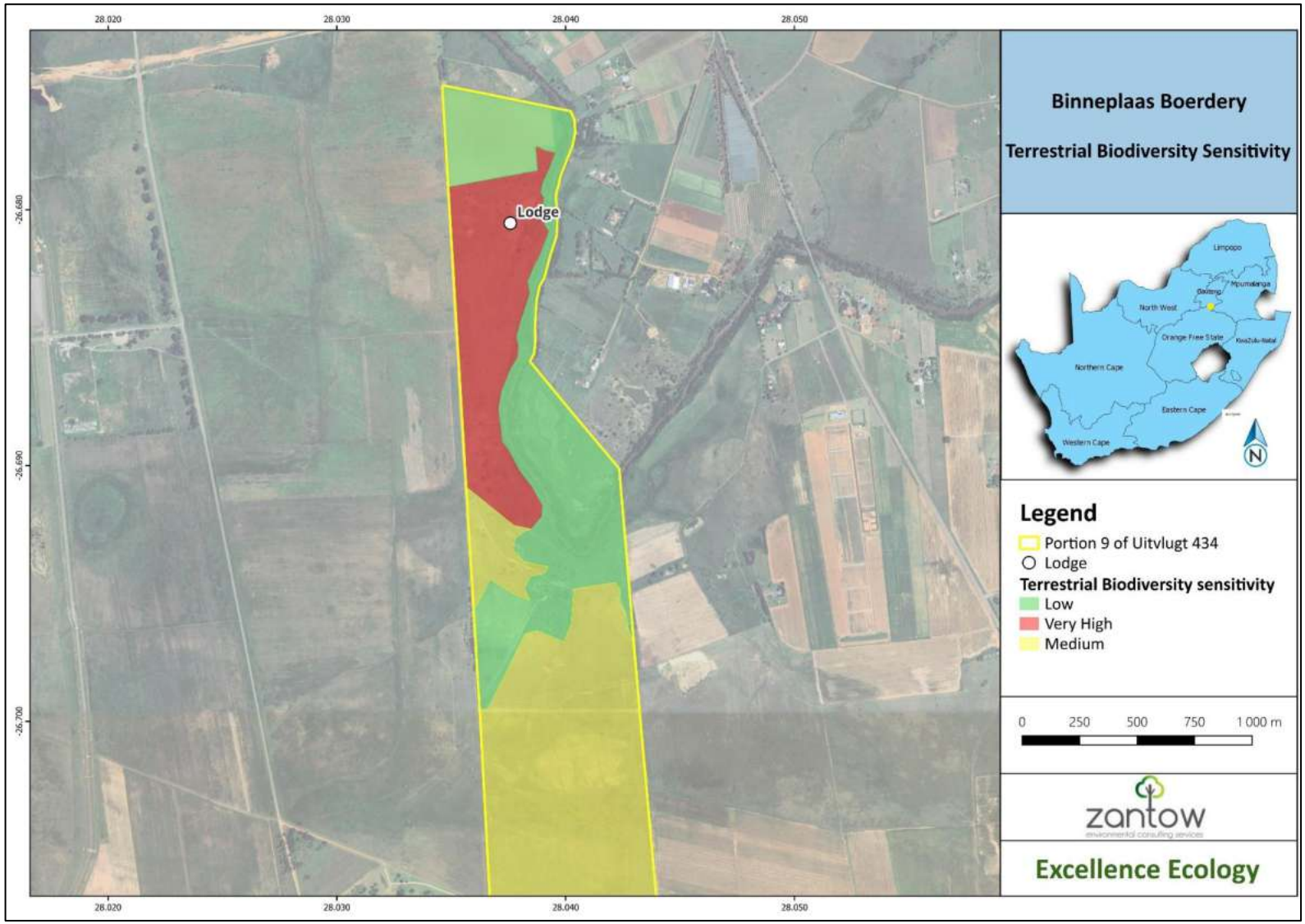


Figure 31: Terrestrial Biodiversity Sensitivity

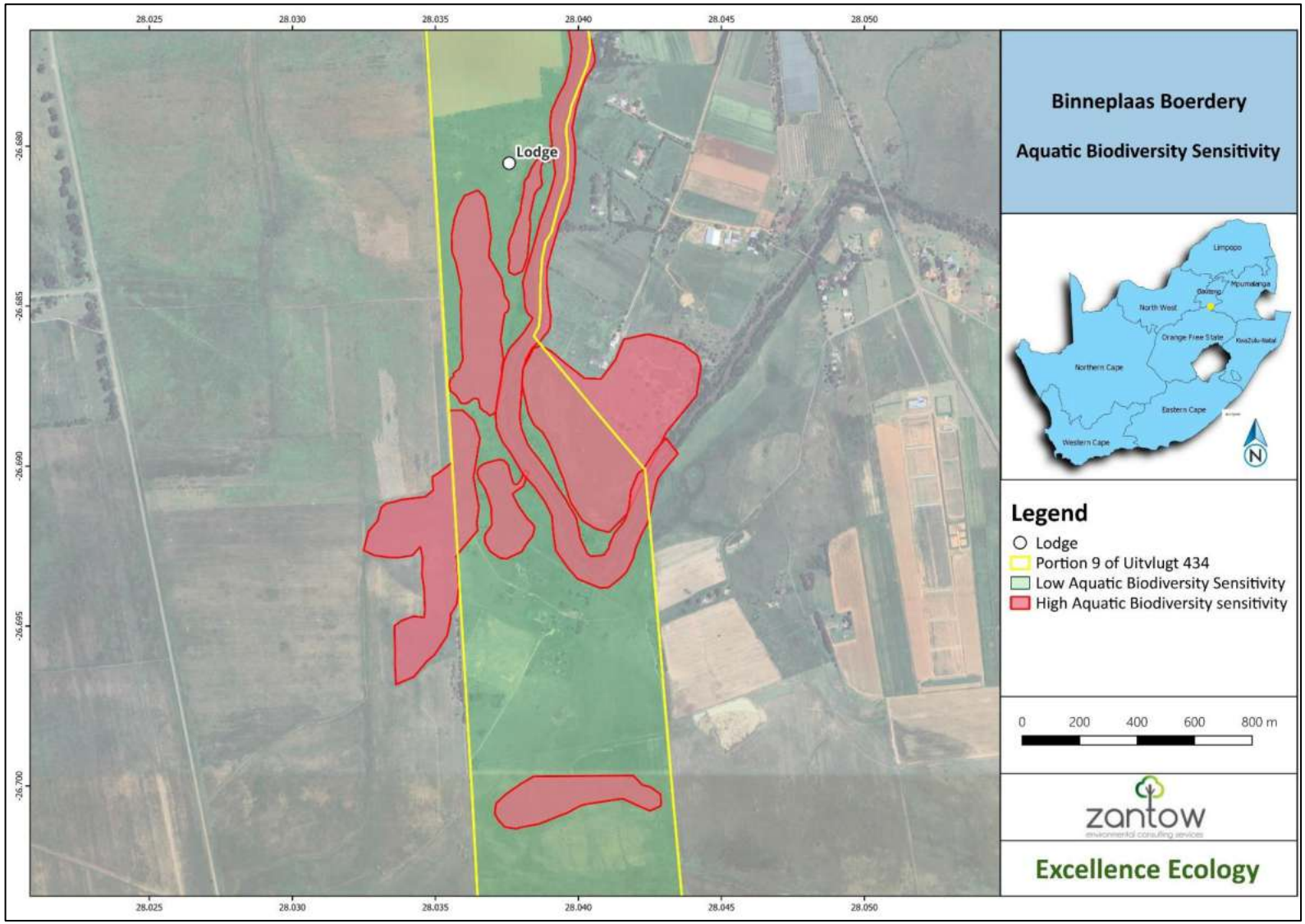


Figure 32: Aquatic Biodiversity Sensitivity

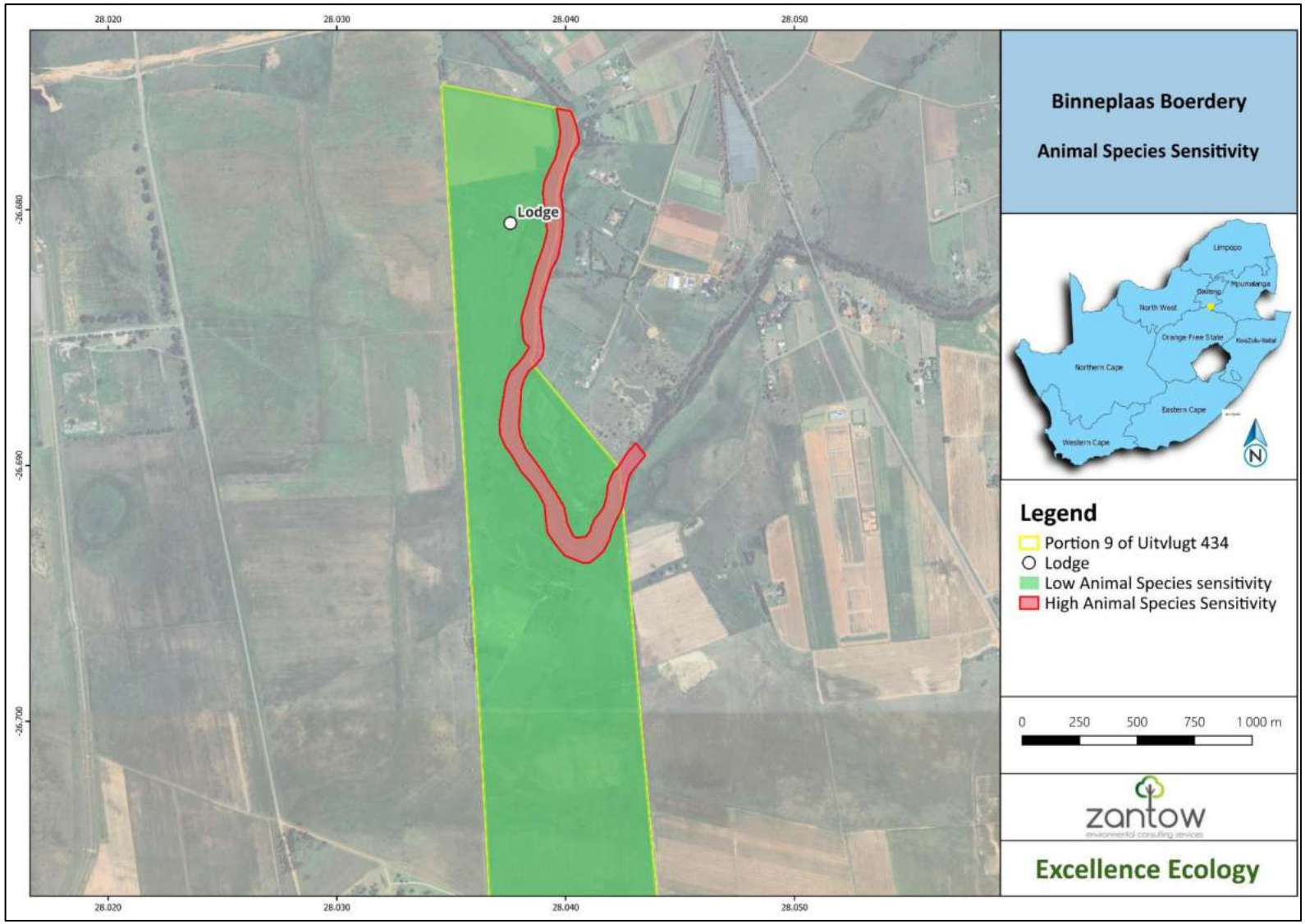


Figure 33: Animal Species Sensitivity

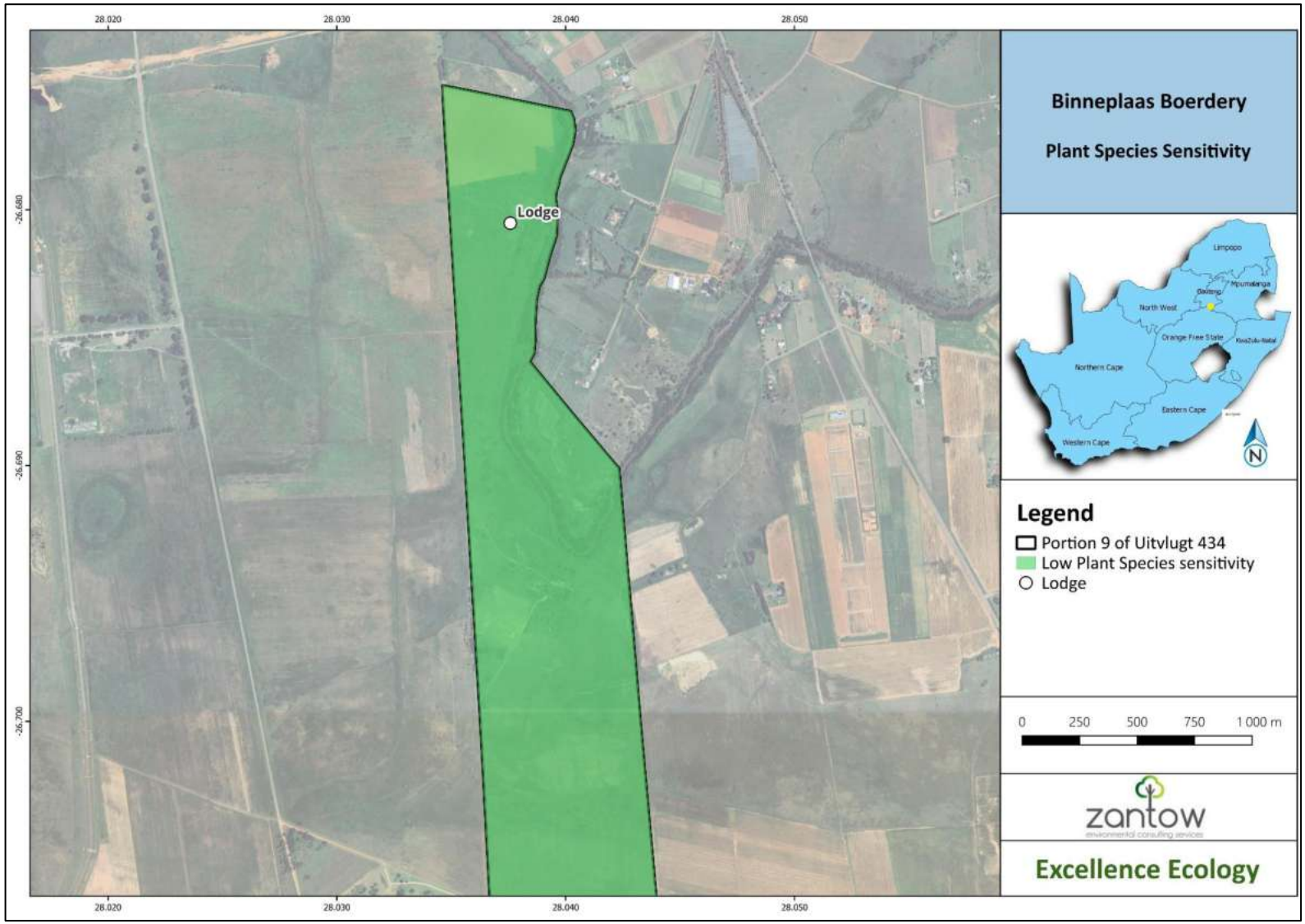


Figure 34: Plant Species Sensitivity

7 POTENTIAL IMPACTS AND MITIGATION MEASURES

An environmental impact is defined as any change to the environment, whether physical, chemical, biological, cultural, or socio-economic. Impacts are typically linked to specific human activities and can be either positive or negative. They may affect the environment directly or indirectly, and their effects can accumulate over time. There are three major categories of impacts on biodiversity namely:

- Impacts on habitat resulting in loss, degradation and / or fragmentation.
- Direct impacts on fauna and flora and species, for example plants and animals that are endemic / threatened / specially adapted to a habitat, will not be able to survive if that habitat is destroyed or altered by the development.
- Impact on natural environmental processes and ecosystem functioning. This can lead to an accumulated effect on both habitat and species.

This biodiversity assessment focused on the description of ecosystem- and species-related biodiversity. It can be expected that if ecosystem diversity is managed effectively, species and genetic diversity should also be protected. Emphasis was therefore placed on the ecosystem diversity (landscape/habitat types) within the proposed development area, with reference to biota observed and expected to utilise these landscapes or habitat types.

Impact ratings are given in Table 24.

7.1 REMOVAL AND DISTURBANCE OF INDIGENOUS VEGETATION

A small section of the Vulnerable Soweto Highveld Grassland will be removed for the proposed development and other areas will be disturbed by the construction and operation of the lodge.

Mitigation measures

- **Minimise disturbance from heavy vehicles:** Heavy vehicles should avoid primary grassland and wetlands wherever possible. Unnecessary driving through natural vegetation must be strictly prohibited.
- **Protect natural vegetation near accommodation units:** No gardens or landscaping will be established immediately adjacent to the self-catering units, to minimise disturbance to the surrounding natural vegetation.

7.2 HABITAT DESTRUCTION

The clearance of vegetation will destroy a very small section of fauna habitat.

Mitigation measures

- Minimise disturbance.
- If any fauna is encountered during development, it must not be killed.

7.3 DISTURBANCE OF WETLANDS

Construction and operation of the proposed lodge will cause disturbance to wetlands.

Mitigation measures

- No development may take place in the wetlands, the river and riparian areas and buffer zones.
- Walking trails must avoid wetlands.

7.4 SPREAD OF ALIEN AND INVADER SPECIES

Ongoing movement of personnel and vehicles on and off the site during the construction phase poses a risk of introducing alien plant species. Vehicles can transport seeds, including those of invasive species, which may establish along access routes, particularly in disturbed areas. Disturbance of vegetation further facilitates the establishment of invasive species, as many indigenous species are less tolerant of such disturbance.

Mitigation measures

- **Implement an early intervention eradication/control programme:** If invasive species are detected, immediate action should be taken to prevent their spread into surrounding natural ecosystems.
- **Control measures:** This involves removing existing alien invasive plants, eliminating emerging seedlings, and establishing and managing alternative vegetation cover in disturbed areas to limit re-growth and re-invasion.
- **Monitoring programme:** A regular monitoring programme should be instituted to detect invasive species early, ideally before they become established and, in the case of weeds, prior to seed release.

7.5 SOIL EROSION AND SEDIMENTATION

Vegetation prevents soil erosion. Once it is removed, soil erosion can occur.

Mitigation measures

- **Minimise land disturbance:** Limit the extent of land disturbance and implement stringent erosion and dust control measures throughout the construction phase.
- **Repair erosion promptly:** Any areas affected by erosion should be rehabilitated as soon as possible to promote vegetation recovery and stabilisation.
- **Maintain indigenous vegetation cover:** Preserve as much existing indigenous vegetation as possible within the development footprint to protect soil, reduce bare surfaces, and enhance overall site stability.

7.6 POLLUTION

Soil and water pollution may take place if heavy vehicles spill hydrocarbons.

Mitigation measures

- **Minimise risk of soil contamination:** Spillages of reagents, hydrocarbons, or other hazardous substances during construction can be reduced through a rigorous and proactive vehicle maintenance programme.

- **Protect watercourses:** Pollution or spillage of any materials into rivers, wetlands, or other water bodies must be prevented, minimised, or remediated through proper operational and maintenance procedures, along with effective protective measures.
- **Proper disposal of pollutants:** Oils and other potential contaminants must be disposed of at licensed facilities, with the necessary approvals from site management.
- **Vehicle maintenance protocols:** Vehicles must be regularly checked for oil leaks, and all maintenance activities should occur at designated sites located outside wetlands and their buffer zones.
- **Hazardous substance management:** All hazardous materials must be handled in accordance with relevant legislation concerning transport, storage, and use. Storage facilities must be equipped with clearly visible Material Safety Data Sheets (MSDS) for all substances.

Table 24: Impact Rating Table

Impact	Without (WOM) or With Mitigation (WM)	Nature of Impact (Negative or Positive)	GEOGRAPHICAL EXTENT		PROBABILITY		DURATION		REVERSIBILITY		IRREPLACEABLE LOSS OF RESOURCES		CUMULATIVE EFFECT		INTENSITY/ MAGNITUDE		SIGNIFICANCE	
			Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score
Vegetation removal and disturbance	WOM	Negative	Site	1	Definite	4	Long term	3	Barely reversible	3	Marginal	2	Medium	3	Medium	2	Medium	32
	WM	Negative	Site	1	Definite	4	Long term	3	Partly reversible	2	Marginal	2	Low	2	Medium	2	Low	28
Habitat destruction	WOM	Negative	Site	1	Probable	3	Long term	3	Partly reversible	2	Marginal	2	Low	2	Low	1	Low	13
	WM	Negative	Site	1	Probable	3	Short term	1	Partly reversible	2	No loss	1	Negligible	1	Low	1	Low	9
Disturbance of wetlands	WOM	Negative	Site	1	Probable	3	Long term	3	Partly reversible	2	Marginal	2	Low	2	Medium	2		26
	WM	Negative	Site	1	Possible	2	Medium term	2	Completely reversible	1	No loss	1	Negligible	1	Low	1		8
Establishment and Spread of Alien Invasive Vegetation	WOM	Negative	Site	1	Probable	3	Long term	3	Partly reversible	2	Marginal	2	Medium	3	Medium	2	Low	28
	WM	Negative	Site	1	Possible	2	Short term	1	Completely reversible	1	No loss	1	Negligible	1	Low	1	Low	7
Soil Erosion and Sedimentation	WOM	Negative	Site	1	Probable	3	Medium term	2	Partly reversible	2	Marginal	2	Low	2	Medium	2	Low	24
	WM	Negative	Site	1	Possible	2	Short term	1	Completely reversible	1	No loss	1	Negligible	1	Low	1	Low	7
	WOM	Negative	Local / district	2	Possible	2	Long term	3	Partly reversible	2	Marginal	2	Low	2	Medium	2	Low	26

Impact	Without (WOM) or With Mitigation (WM)	Nature of Impact (Negative or Positive)	GEOGRAPHICAL EXTENT		PROBABILITY		DURATION		REVERSIBILITY		IRREPLACEABLE LOSS OF RESOURCES		CUMULATIVE EFFECT		INTENSITY/ MAGNITUDE		SIGNIFICANCE	
			Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score
Pollution of soil and water	WM	Negative	Site	1	Unlikely	1	Short term	1	Completely reversible	1	No loss	1	Negligible	1	Low	1	Low	6

8 DISCUSSION & CONCLUSION

Excellence Ecology was appointed by Zantow Environmental Consulting Services, on behalf of Binneplaas Boerdery, to undertake a Terrestrial Biodiversity Impact Assessment and a Wetland Assessment in support of the environmental authorisation for the proposed construction of a lodge on Portion 9 of the farm Uitvlugt 434, Three Rivers, Gauteng Province. The development includes a main lodge building with a restaurant and ten self-catering units. The project incorporates sustainable design elements, including solar energy generation and rainwater harvesting. The main building is planned to cover approximately 450 m², while each self-catering unit will be approximately 60 m².

The desktop survey indicates that:

- The project area overlaps the Soweto Highveld Grassland (Vulnerable) and the Central Free State Grassland (Least concern) vegetation units.
- According to the Critical Biodiversity Areas (CBA) map, the central pin for the proposed lodge is positioned adjacent to a Terrestrial CBA 1. Depending on the final layout, the development footprint may fall partially or entirely within this sensitive area.
- The project area is 21 km south-west of the Suikerbosrand KBA (Figure 11). Given this distance, the proposed development will not have any direct impact on the KBA.
- The project area does not fall within any National Protected Areas. It is located approximately 20 km north-east of the Suikerbosrand Provincial Nature Reserve and about 16 km south-east of the Vaaldam Nature Reserve. However, the site is situated within a National Protected Area Expansion Strategy (NPAES) Focus Area.
- The project area is located in the Vaal-Orange Water Management Area (WMA) and the C21G Quaternary Catchment.
- The footprint of the proposed lodge falls within an NWM6 wetland and is located adjacent to a NFEPA-designated wetland and NFEPA river (Figure 14).
- The project area is not located in or close to a SWSA. It is approximately 43 km south-east of the Far West Karst Region groundwater SWSA.

A site visit was conducted on the 6th of November 2025 to get baseline information of the area and to identify sensitive areas and SCC.

There are two distinct vegetation units in the project area namely:

- *Themeda triandra – Ziziphus zeyheriana* grassland and
- Wetlands.

The area where the lodge is proposed to be developed is rocky grassland with scattered trees. It is currently used for cattle grazing. The unit has been disturbed to some extent by cattle grazing, but it is likely primary grassland, as no signs of historical cultivation have been recorded. Dominant grass species include *Themeda triandra, Melinis repens* and *Eragrostis chloromelas*. Dominant trees include *Vachellia karroo* and *Searsia pyroides* and dominant shrubs include *Ziziphus zeyheriana* and *Seriphium plumosum*. Dominant forbs recorded include *Ledebouria* spp., *Hypoxis hemerocallidea, Hilliardiella oligocephala* and *Helichrysum rugulosum*.

No plant species of conservation concern (SCC) or protected trees were recorded in this unit. Three species endemic to South Africa were recorded in this unit namely *Hermannia transvaalensis, Ledebouria ovalifolia and Trachyandra erythrorrhiza.* This unit has a high sensitivity as it is primary grassland in the Vulnerable Soweto Highveld Grassland.

The Suikerbosrant River, which runs through the project area, is a tributary to the Vaal River. There are several floodplain wetlands next to the river, which receives water when the river floods its banks, but it also receives runoff from adjacent areas. Six floodplain wetlands were delineated in the larger project area. The River and wetlands were assessed and the results are given in the table below:

Classification	PES	EIS	REC	Buffer
River	B: Largely natural	Moderate	B: Maintain	17 m
Floodplain wetlands	C: Moderately modified	Moderately low	C: Maintain	23 m

No fauna SCC were recorded during the field assessment. The landowner reported possible presence of the spotted-necked otter. Two avifaunal SCC are considered to have a medium likelihood of occurrence in the project area, namely Ardea goliath (Goliath Heron, Near Threatened) and Calidris ferruginea (Curlew Sandpiper, Vulnerable). See Table 13 for details of other fauna SCC.

The Screening Tool Sensitivity Verification is summarised in the table below:

Theme	DFFE Screening Tool Report Sensitivity	Specialist Sensitivity	Rating Confirmed/disputed and Reasons
Terrestrial Biodiversity	Very High	Very High	Confirmed The area where the lodge is proposed consists of primary grassland of the Vulnerable Soweto Highveld Grassland
Aquatic Biodiversity	Very high	Low to Very high	Confirmed The riparian area and the floodplain wetlands have a very high aquatic sensitivity. Grassland areas have a low aquatic biodiversity sensitivity.
Animal Species	High	Low to High	Confirmed The spotted-necked otter is likely to be present next to the Suikerbosrant River. Some other fauna SCC may be present at the river, while the area where the lodge is proposed no fauna SCC were recorded or are likely to be present and therefore it has a low sensitivity for Animal Species.
Plant Species	Medium	Low to Medium	Confirmed No plant Species of Conservation Concern (SCC) were recorded, but there is suitable habitat for plant SCC in the riparian area.

A Risk Assessment Matrix was completed for the following potential impacts on the wetlands namely

1) Disturbance of wetlands
2) Sedimentation of wetlands and river
3) Soil and water pollution
4) Spread and increase in Invasive Alien Vegetation

All risks rated as low.

A NEMA Impact Assessment was also completed to rate the following potential impacts:

1) Removal of indigenous vegetation
2) Habitat destruction
3) Disturbance of wetlands
4) Spread of alien and invader species
5) Soil erosion and sedimentation
6) Pollution

All impacts rated low except for removal of indigenous vegetation, which rated medium before mitigation and low after mitigation.

The proposed development can be approved from a terrestrial and aquatic biodiversity perspective, as long as, all mitigation measures are adhered to. See Section 7 for mitigation measures.

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Appendix A: Specialist CV and Declaration of Independence

CURRICULUM VITAE

Mari van der Westhuizen

(M.Sc. Environmental Sciences, Professional Natural Scientist: Ecological Science)

PERSONAL DETAILS

Name:	Mari van der Westhuizen
Maiden name:	La Grange
Nationality:	South African
Date of birth:	26 October 1985
E-mail address:	mariwesthuizen@gmail.com
Cell phone number:	+27 82 257 1715
Identity number:	851026 0045 083

KEY QUALIFICATION

M. Sc. Environmental Sciences (2010)

B.Sc. Honours in Ecological Remediation and Sustainable Usage (2007)

B. Sc. with Microbiology and Botany at the North West University, Potchefstroom Campus (2006)

AWARDS AND PRIZES

Best Second year Microbiology student (2005)

Best M.Sc. in Botany (2010)

SHORT COURSES COMPLETED

Wetland Legislation (2024) Wetrest

Track and Sign Workshop (2023) Motsumi Bush Courses

Tools for Wetland Assessment (2015) Rhodes University

Landscape Function Analysis course (2010) North West University

Multivariate Statistics course (CANOCO) (2009) University of Kwazulu-Natal

MEMBERSHIP WITH PROFESSIONAL BODIES AND ASSOCIATIONS

Registered as a Professional Natural Scientist in Ecological Science at the South African Council for Natural Scientific Professions (SACNASP), with registration number 400166/15.

South African Association of Botanists (SAAB).

KEY RELEVANT EXPERIENCE

13 years' experience:

- Biodiversity, plant and animal species impact assessments for Environmental Authorisations (Environmental Impact Assessments).
- Wetland assessments for EIA's and WULA's.
- Wetland Rehabilitation Plans.
- Protected tree counts and protected tree license applications.
- Declared invader surveys.
- GIS mapping and data processing (ArcGIS and QGIS).
- Writing and reviewing scientific reports.
- Mentoring junior ecologists.

DECLARATION OF INDEPENDENCE

I, Mari van der Westhuizen, hereby confirm my independence as a specialist and declare that I do not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which I was appointed as ecologist in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the Terrestrial Biodiversity and Wetland Impact Assessment for the proposed lodge for Binneplaas Boerdery, Gauteng Province.

Full Name: Mari van der Westhuizen

Title / Position: Ecologist
Qualification(s): B.Sc. in Botany and Microbiology (2006) North West University;
B.Sc. Honours in Ecological Remediation and Sustainable Usage (2007) North West University;
M.Sc. in Environmental Sciences (2010) North West University
Experience (years): 13
Registration(s): SACNASP (Pri.Sci.Nat. # 400166/15 – Ecological Science)
Phone no: 082 257 1715 Email: mari@excellence-ecology.co.za

CURRICULUM VITAE

Elandrie Davoren

(Ph.D. Environmental Sciences, Junior Ecologist)

PERSONAL DETAILS

Name:	Elandrie Davoren
Maiden name:	Davoren
Nationality:	South African
Date of birth:	26 October 1985
E-mail address:	elandriedavoren@yahoo.com
Cell phone number:	+27 83 283 0106
Identity number:	851026 0079 082

KEY QUALIFICATION

Ph.D. Environmental Science (2017)
M. Sc. Environmental Sciences (2010)
B.Sc. Honours in Urban Ecology (2007)
B. Sc. with Botany and Zoology at the North West University, Potchefstroom Campus (2006)

AWARDS AND PRIZES

Best M.Sc. in Botany (2010)

SHORT COURSES COMPLETED

Practical Implementation of Environmental Auditing and Monitoring (2024) Business Success Solutions
Track and Sign Workshop (2023) Motsumi Bush Courses

MEMBERSHIP WITH PROFESSIONAL BODIES AND ASSOCIATIONS

South African Association of Botanists (SAAB).

KEY RELEVANT EXPERIENCE

4 years' experience:

- Biodiversity, plant and animal species impact assessments for Environmental Authorizations (Environmental Impact Assessments).
- Wetland assessments for WULA's.
- Declared invader surveys.
- GIS mapping and data processing (ArcGIS and QGIS).
- Writing and reviewing scientific reports.

DECLARATION OF INDEPENDENCE

I, Elandrie Davoren, hereby confirm my independence as a specialist and declare that I do not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which I was appointed as ecologist in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the terrestrial biodiversity, aquatic biodiversity, plant and animal species compliance statement for the environmental authorisation for Terrestrial Biodiversity and Wetland Impact Assessment for the proposed lodge for Binneplaas Boerdery, Gauteng Province.

Full Name: Elandrie Davoren

Title / Position: Junior Ecologist
Qualification(s): B.Sc. in Botany and Zoology (2006) North West University;
B.Sc. Honours in Urban Ecology (2007) North West University;
M.Sc in Environmental Sciences (2010) North West University
Ph.D. Environmental Science (2017) North West University
Experience (years): 4
Phone no: 083 283 0106 Email: elandriedavoren@yahoo.com

Appendix B: Plant species recorded in the project area

Table 25: List of recorded trees and shrubs

Scientific name	Common name	Exotic	Status
Erythrina zeyheri	Ploegbreker	No	Least concern
Eucalyptus camaldulensis	Red gum	Yes	Declared invader 1b
Vachellia karroo	Sweet thorn	No	Least concern

Table 26: List of recorded grasses and reeds

Scientific name	Common name	Exotic	Status
Cynodon dactylon	Couch Grass	No	Least concern
Eragrostis chloromelas	Narrow curly leaf	No	Least concern
Eragrostis rigidior	Broad curly leaf	No	Least concern
Melinis repens	Natal red top	No	Least concern
Themeda triandra	Red grass	No	Least concern
Urochloa mosambicensis	Bushveld signal grass	No	Least concern

Table 27: List of recorded forbs and succulents

Scientific name	Common name	Exotic	Status
Acalypha caperonioides	False-nettle Bush	No	Data Deficient - Taxonomically Problematic
Ajuga ophrydis	Bugle Plant	No	Least concern
Alternanthera pungens	Khaki Burrweed	Yes	Not evaluated
Argemone ochroleuca	White-flowered Mexican poppy	Yes	Declared invader 1b
Bidens pilosa	Common blackjack	Yes	Not evaluated
Convolvulus sagittatus	Wild bindweed	No	Least concern
Conyza bonariensis	Flax-leaf fleabane	Yes	Not evaluated
Cyanotis speciosa	Doll's powderpuff	No	Least concern
Felicia muricata	Wild aster	No	Least concern
Gomphocarpus fruticosus	Milkweed	No	Least concern
Gomphrena celocioides	Prostrate globe amaranth	Yes	Not evaluated
Helichrysum rugulosum	Marotole (ss)	No	Least concern
Hermannia depressa	Rooi-opslag	No	Least concern
Hermannia transvaalensis		No	Least concern, SA endemic
Indigofera comosa		No	Least concern
Ledebouria revoluta	Incubudwana (z)	No	Least concern
Macledium zeyheri	Toy sugar bush	No	Least concern
Ocimum obovatum	Cat's Whiskers	No	Least concern
Oxalis corniculata	Creeping sorrel	Yes	Not evaluated
Pentzia incana	Skaapkaroo	No	Least concern

Scientific name	Common name	Exotic	Status
Plantago lanceolata	Buckhorn plantain	Yes	Not evaluated
Pseudognaphaleum luteo-album	Cud weed	Yes	Not evaluated
Rhynchosia totta		No	Least concern
Richardia brasiliensis	Tropical richardia	Yes	Not evaluated
Scabiosa columbaria	Wild Scabious	No	Least concern
Senecio consanguineus	Ragworth	No	Least concern
Solanum lichtensteinii	Large yellow bitter apple	No	Least concern
Tagetes minuta	Tall khaki weed	Yes	Not evaluated
Ursinia nana	Yellow margaret	No	Least concern
Verbena aristigera	Fine-leaved verbena	Yes	Not evaluated

Appendix C: Fauna species list for the project area (SABAP2 & iNaturalist)

Species highlighted in blue were recorded.

Table 28: Birds (SABAP2)

Family	Scientific name	Common name	Red list category
Accipitridae	Accipiter melanoleucus	Black Sparrowhawk (Goshawk)	Least Concern
Accipitridae	Accipiter ovampensis	Ovambo Sparrowhawk	Least Concern
Accipitridae	Astur melanoleucus	Black Goshawk	Least Concern
Accipitridae	Buteo buteo	Steppe (Common) Buzzard	Least Concern
Accipitridae	Buteo rufofuscus	Jackal Buzzard	Least Concern
Accipitridae	Circus ranivorus	African Marsh-Harrier	Global: LC; BLSA: EN
Accipitridae	Elanus caeruleus	Black-shouldered (Winged) Kite	Least Concern
Accipitridae	Haliaeetus vocifer	African Fish-Eagle	Least Concern
Accipitridae	Polyboroides typus typus	East African Harrier-Hawk	Least Concern
Acrocephalidae	Acrocephalus arundinaceus	Great Reed Warbler	Least Concern
Alaudidae	Calandrella cinerea	Red-capped Lark	Least Concern
Alaudidae	Chersomanes albofasciata	Spike-heeled Lark	Least Concern
Alaudidae	Mirafra africana	Rufous-naped Lark	Least Concern
Alaudidae	Mirafra fasciolata	Eastern Clapper Lark	Least Concern
Alcedinidae	Ceryle rudis rudis	African Pied Kingfisher	Least Concern
Alcedinidae	Halcyon senegalensis cyanoleuca	Southern Woodland Kingfisher	Least Concern
Alcedinidae	Corythornis cristatus	Malachite Kingfisher	Least Concern
Anatidae	Alopochen aegyptiaca	Egyptian Goose	Least Concern
Anatidae	Anas capensis	Cape Teal	Least Concern
Anatidae	Anas erythrorhyncha	Red-billed Teal (Duck)	Least Concern
Anatidae	Anas hottentota	Blue-billed Teal (Hottentot Teal)	Least Concern
Anatidae	Anas smithii	Cape Shoveler	Least Concern
Anatidae	Anas sparsa	African Black Duck	Least Concern
Anatidae	Anas sparsa sparsa	Southern African Black Duck	Vulnerable
Anatidae	Anas undulata	Yellow-billed Duck	Least Concern
Anatidae	Dendrocygna bicolor	Fulvous Duck	Least Concern
Anatidae	Netta erythrophthalma	Southern Pochard	Least Concern
Anatidae	Oxyura maccoa	Maccoa duck	Least Concern
Anatidae	Plectropterus gambensis	Spur-winged Goose	Least Concern
Anatidae	Spatula smithii	Cape Shoveler	Least Concern
Anatidae	Tadorna cana	South African Shelduck	Least Concern
Anatidae	Netta rufina	Red-crested Pochard	Least Concern
Anhingidae	Anhinga rufa	African Darter	Least Concern
Apodidae	Apus affinis	Little Swift	Least Concern
Apodidae	Apus apus	Common Swift	Least Concern
Apodidae	Apus caffer	White-rumped Swift	Least Concern
Apodidae	Apus horus	Horus Swift	Least Concern
Apodidae	Cypsiurus parvus	African Palm-Swift	Least Concern
Ardeidae	Ardea alba	Great Egret	Least Concern
Ardeidae	Ardea cinerea	Grey Heron	Least Concern

Family	Scientific name	Common name	Red list category
Ardeidae	*Ardea goliath*	Goliath Heron	Near Threatened
Ardeidae	*Ardea melanocephala*	Black-headed Heron	Least Concern
Ardeidae	*Ardea purpurea*	Purple Heron	Least Concern
Ardeidae	*Ardeola ralloides*	Squacco Heron	Least Concern
Ardeidae	*Egretta ardesiaca*	Black Heron	Least Concern
Ardeidae	*Egretta garzetta garzetta*	Western Little Egret	Least Concern
Ardeidae	*Ixobrychus minutus*	Little Bittern	Least Concern
Ardeidae	*Nycticorax nycticorax*	Black-crowned Night-Heron	Least Concern
Ardeidae	*Ardea intermedia*	Intermediate Heron	Least Concern
Ardeidae	*Bubulcus ibis*	Cattle Egret	Least Concern
Ardeidae	*Butorides striata*	Green-backed (Striated) Heron	Least Concern
Burhinidae	*Burhinus capensis*	Spotted Thick-knee (Dikkop)	Least Concern
Charadriidae	*Charadrius hiaticula*	Common Ringed Plover	Least Concern
Charadriidae	*Charadrius pecuarius*	Kittlitz's Plover	Least Concern
Charadriidae	*Charadrius tricollaris*	Three-banded Plover	Least Concern
Charadriidae	*Vanellus armatus*	Blacksmith Lapwing (Plover)	Least Concern
Charadriidae	*Vanellus coronatus*	Crowned Lapwing (Plover)	Least Concern
Charadriidae	*Vanellus senegallus*	African Wattled Lapwing (Plover)	Least Concern
Ciconiidae	*Mycteria ibis*	Yellow-billed Stork	Global: LC; BLSA: EN
Cisticolidae	*Cisticola aridulus*	Desert Cisticola	Least Concern
Cisticolidae	*Cisticola fulvicapillus [fulvicapilla]*	Neddicky (Piping Cisticola)	Least Concern
Cisticolidae	*Cisticola juncidis*	Zitting (Fan-tailed) Cisticola	Least Concern
Cisticolidae	*Cisticola tinniens*	Levaillant's (Tinkling) Cisticola	Least Concern
Cisticolidae	*Prinia flavicans*	Black-chested Prinia	Least Concern
Cisticolidae	*Prinia subflava*	Tawny-flanked Prinia	Least Concern
Cisticolidae	*Cisticola ayresii*	Wing-snapping Cisticola	Least Concern
Cisticolidae	*Cisticola chiniana*	Rattling Cisticola	Least Concern
Cisticolidae	*Cisticola textrix*	Cloud Cisticola	Least Concern
Coliidae	*Colius striatus*	Speckled Mousebird	Least Concern
Coliidae	*Urocolius indicus*	Red-faced Mousebird	Least Concern
Columbidae	*Columba guinea*	Speckled (Rock) Pigeon	Least Concern
Columbidae	*Columba livia*	Rock (Feral) Dove (Pigeon)	Least Concern
Columbidae	*Oena capensis*	Namaqua Dove	Least Concern
Columbidae	*Spilopelia senegalensis*	Laughing Dove	Least Concern
Columbidae	*Streptopelia capicola*	Cape Turtle (Ring-necked) Dove	Least Concern
Columbidae	*Streptopelia semitorquata*	Red-eyed Dove	Least Concern
Corvidae	*Corvus albus*	Pied Crow	Least Concern
Cuculidae	*Centropus burchellii burchellii*	Burchell's Coucal	Near Threatened
Cuculidae	*Chrysococcyx caprius*	Dideric (Diederik) Cuckoo	Least Concern
Dacelonidae	*Megaceryle maxima*	Giant Kingfisher	Least Concern
Dendrocygnidae	*Dendrocygna viduata*	White-faced (Whistling-) Duck	Least Concern
Dendrocygnidae	*Thalassornis leuconotus*	White-backed Duck	Least Concern
Estrildidae	*Amadina erythrocephala*	Red-headed Finch	Least Concern
Estrildidae	*Amandava subflava*	Orange-breasted (Zebra) Waxbill	Least Concern

Family	Scientific name	Common name	Red list category
Estrildidae	*Brunhilda erythronotos*	Black-faced Waxbill	Least Concern
Estrildidae	*Estrilda astrild*	Common Waxbill	Least Concern
Estrildidae	*Lonchura cucullata*	Bronze mannikin	Least Concern
Estrildidae	*Ortygospiza atricollis*	African Quail-finch	Least Concern
Estrildidae	*Spermestes cucullata*	Bronze Mannikin	Least Concern
Estrildidae	*Spermestes cucullata scutata*	Southern Bronze Mannikin	Least Concern
Falconidae	*Falco naumanni*	Lesser Kestrel	Least Concern
Falconidae	*Falco amurensis*	Amur Kestrel	Least Concern
Falconidae	*Falco vespertinus*	Red-footed Kestrel	Global: VU; BLSA: NT
Fringillidae	*Crithagra atrogularis*	Black-throated Canary	Least Concern
Fringillidae	*Crithagra flaviventris*	Yellow Canary	Least Concern
Fringillidae	*Crithagra gularis*	Streaky-headed Seedeater (Canary)	Least Concern
Fringillidae	*Crithagra sulphurata*	Brimstone Canary	Least Concern
Fringillidae	*Crithagra mozambica*	Yellow-fronted (eyed) Canary	Least Concern
Glareolidae	*Cursorius rufus*	Burchell's Courser	Least Concern
Gruidae	*Grus paradiseus*	Blue Crane	Near Threatened
Hirundinidae	*Cecropis abyssinica*	Lesser Striped-Swallow	Least Concern
Hirundinidae	*Hirundo albigularis*	White-throated Swallow	Least Concern
Hirundinidae	*Hirundo rustica*	Barn (European) Swallow	Least Concern
Hirundinidae	*Petrochelidon spilodera*	South African Swallow	Least Concern
Hirundinidae	*Ptyonoprogne fuligula*	Large Rock Martin	Least Concern
Hirundinidae	*Riparia paludicola*	Brown-throated (Plain) Martin	Least Concern
Hirundinidae	*Cecropis cucullata*	Greater Striped Swallow	Least Concern
Indicatoridae	*Prodotiscus regulus*	Brown-backed (Sharp-billed) Honeybird (Honeyguide)	Least Concern
Jacanidae	*Actophilornis africanus*	African Jacana	Least Concern
Laniidae	*Lanius collaris*	Southern Fiscal	Least Concern
Laniidae	*Lanius collurio*	Red-backed Shrike	Least Concern
Laniidae	*Lanius minor*	Lesser Grey Shrike	Least Concern
Laridae	*Chlidonias hybridus*	Whiskered Tern	Least Concern
Laridae	*Chlidonias leucopterus*	White-winged Tern	Least Concern
Laridae	*Chroicocephalus cirrocephalus*	Grey-headed Gull	Least Concern
Laridae	*Hydroprogne caspia*	Caspian Tern	Vulnerable
Lybiidae	*Lybius torquatus*	Black-collared Barbet	Least Concern
Lybiidae	*Trachyphonus vaillantii*	Crested Barbet	Least Concern
Lybiidae	*Tricholaema leucomelas*	Acacia Pied Barbet	Least Concern
Malaconotidae	*Laniarius ferrugineus*	Southern Boubou	Least Concern
Malaconotidae	*Tchagra australis*	Brown-crowned Tchagra	Least Concern
Malaconotidae	*Telophorus zeylonus*	Bokmakierie	Least Concern
Meropidae	*Merops apiaster*	European Bee-eater	Least Concern
Meropidae	*Merops bullockoides*	White-fronted Bee-eater	Least Concern
Monarchidae	*Terpsiphone viridis*	African Paradise-Flycatcher	Least Concern
Motacillidae	*Anthus cinnamomeus*	African Pipit	Least Concern
Motacillidae	*Macronyx capensis*	Cape (Orange-throated) Longclaw	Least Concern
Motacillidae	*Motacilla aguimp*	African Pied Wagtail	Least Concern

Family	Scientific name	Common name	Red list category
Motacillidae	*Motacilla capensis*	Cape Wagtail	Least Concern
Motacillidae	*Anthus leucophrys*	Plain-backed Pipit	Least Concern
Muscicapidae	*Cercotrichas paena*	Kalahari Scrub-Robin	Least Concern
Muscicapidae	*Cossypha caffra*	Cape Robin-chat	Least Concern
Muscicapidae	*Muscicapa striata*	Spotted Flycatcher	Least Concern
Muscicapidae	*Myrmecocichla formicivora*	Ant-eating Chat	Least Concern
Muscicapidae	*Oenanthe familiaris*	Familiar Chat	Least Concern
Muscicapidae	*Oenanthe pileata*	Capped Wheatear	Least Concern
Muscicapidae	*Saxicola torquata*	African (Common) Stonechat	Least Concern
Muscicapidae	*Thamnolaea cinnamomeiventris*	Mocking Cliff-Chat	Least Concern
Musophagidae	*Crinifer concolor*	Grey Go-away-bird	Least Concern
Nectariniidae	*Cinnyris talatala*	White-bellied (breasted) Sunbird	Least Concern
Numididae	*Numida meleagris*	Helmeted Guineafowl	Least Concern
Otididae	*Afrotis afraoides*	Northern Black Korhaan	Near Threatened
Passeridae	*Passer diffusus*	Southern Greyheaded Sparrow (split)	Least Concern
Passeridae	*Passer domesticus*	House Sparrow	Least Concern
Passeridae	*Passer melanurus*	Cape Sparrow	Least Concern
Phalacrocoracidae	*Microcarbo africanus*	Reed (Long-tailed) Cormorant	Least Concern
Phalacrocoracidae	*Phalacrocorax lucidus*	White-breasted (Great) Cormorant	Least Concern
Phasianidae	*Pternistis swainsonii*	Swainson's Spurfowl (Francolin)	Least Concern
Phasianidae	*Scleroptila gutturalis*	Orange River Francolin	Least Concern
Phoenicopteridae	*Phoeniconaias minor*	Lesser flamingo	Least Concern
Phoenicopteridae	*Phoenicopterus roseus*	Greater Flamingo	Global: LC; BLSA: NT
Phoeniculidae	*Phoeniculus purpureus*	Green (Red-billed) Wood-hoopoe	Least Concern
Phylloscopidae	*Phylloscopus trochilus*	Willow Warbler	Least Concern
Picidae	*Jynx ruficollis*	Red-throated Wryneck	Least Concern
Ploceidae	*Amblyospiza albifrons*	Thick-billed (Grosbeak) Weaver	Least Concern
Ploceidae	*Euplectes afer*	Yellow-crowned (Golden) Bishop	Least Concern
Ploceidae	*Euplectes albonotatus*	White-winged Widowbird	Least Concern
Ploceidae	*Euplectes ardens*	Red-collared Widowbird	Least Concern
Ploceidae	*Euplectes axillaris*	Fan-tailed (Red-shouldered) Widowbird	Least Concern
Ploceidae	*Euplectes orix*	Southern Red (Red) Bishop	Least Concern
Ploceidae	*Euplectes progne*	Long-tailed Widowbird	Least Concern
Ploceidae	*Plocepasser mahali*	White-browed Sparrow-Weaver	Least Concern
Ploceidae	*Ploceus velatus*	Southern Masked-Weaver	Least Concern
Ploceidae	*Quelea quelea*	Red-billed Quelea	Least Concern
Podicipedidae	*Podiceps cristatus*	Great Crested Grebe	Least Concern
Podicipedidae	*Podiceps nigricollis*	Black-necked grebe	Least Concern
Podicipedidae	*Tachybaptus ruficollis*	Little Grebe (Dabchick)	Least Concern
Pycnonotidae	*Pycnonotus nigricans*	African Red-eyed Bulbul	Least Concern
Pycnonotidae	*Pycnonotus tricolor*	Dark-capped (Black-eyed) Bulbul	Least Concern
Rallidae	*Fulica cristata*	Red-knobbed Coot	Least Concern
Rallidae	*Gallinula chloropus*	Common Moorhen	Least Concern

Family	Scientific name	Common name	Red list category
Rallidae	*Porphyrio madagascariensis*	African Purple (Purple) Swamphen (Gallinule)	Least Concern
Rallidae	*Sarothrura rufa*	Red-chested Flufftail	Least Concern
Rallidae	*Zapornia flavirostra*	Black Crake	Least Concern
Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt	Least Concern
Recurvirostridae	*Recurvirostra avosetta*	Pied (Avocet) Avocet	Least Concern
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	Least Concern
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	Global: NT; BLSA: VU
Scolopacidae	*Calidris minuta*	Little Stint	Least Concern
Scolopacidae	*Calidris pugnax*	Ruff	Least Concern
Scolopacidae	*Gallinago nigripennis*	African (Ethiopian) Snipe	Least Concern
Scolopacidae	*Tringa glareola*	Wood Sandpiper	Least Concern
Scolopacidae	*Tringa nebularia*	Common Greenshank	Least Concern
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper	Least Concern
Scopidae	*Scopus umbretta*	Hamerkop	Least Concern
Strigidae	*Bubo africanus*	Spotted Eagle-Owl	Least Concern
Strigidae	*Asio capensis*	Marsh Owl	Least Concern
Struthionidae	*Struthio camelus australis*	Southern Ostrich	Least Concern
Struthionidae	*Struthio camelus*	Common Ostrich	Least Concern
Sturnidae	*Acridotheres tristis*	Common Myna	Least Concern
Sturnidae	*Creatophora cinerea*	Wattled Starling	Least Concern
Sturnidae	*Lamprotornis bicolor*	Pied (African Pied) Starling	Least Concern
Sturnidae	*Lamprotornis nitens*	Cape Glossy (Glossy) Starling	Least Concern
Sylviidae	*Acrocephalus gracilirostris*	Lesser Swamp- (Cape Reed) Warbler	Least Concern
Sylviidae	*Acrocephalus scirpaceus*	Common Reed Warbler	Least Concern
Sylviidae	*Bradypterus baboecala*	Little Rush- (African Sedge) Warbler	Least Concern
Sylviidae	*Curruca subcoerulea*	Chestnut-vented Tit-Babbler	Least Concern
Sylviidae	*Acrocephalus baeticatus*	African Reed (Old, Use Common Reed Warbler)	Least Concern
Sylviidae	*Acrocephalus palustris*	Marsh (European Marsh) Warbler	Least Concern
Threskiornithidae	*Bostrychia hagedash*	Hadada Ibis	Least Concern
Threskiornithidae	*Platalea alba*	African Spoonbill	Least Concern
Threskiornithidae	*Threskiornis aethiopicus*	African Sacred (Sacred) Ibis	Least Concern
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	Least Concern
Turdidae	*Melaenornis silens*	Fiscal flycatcher	Least Concern
Turdidae	*Turdus smithi*	Karoo Thrush (split)	Least Concern
Upupidae	*Upupa africana*	African Hoopoe	Least Concern
Upupidae	*Upupa epops*	Common Hoopoe	Least Concern
Viduidae	*Vidua chalybeata*	Village Indigobird	Least Concern
Viduidae	*Vidua macroura*	Pin-tailed Whydah	Least Concern
Zosteropidae	*Zosterops pallidus*	Orange River white-eye	Least Concern
Zosteropidae	*Zosterops virens*	Cape White-eye (split)	Least Concern

Table 29: Frogs

Family	Scientific name	Common name	Red list category
Pyxicephalidae	*Tomopterna adiastola*	Confused Sand frog	Least Concern
Pyxicephalidae	*Pyxicephalus adspersus*	Giant African Bullfrog	Least Concern

Table 30: Reptiles

Family	Scientific name	Common name	Red list category
Gekkonidae	*Lygodactylus capensis*	Common Dwarf Gecko	Least Concern (SARCA 2014)
Psammophiidae	*Psammophylax rhombeatus*	Rhombic Skaapsteker	Least Concern (SARCA 2014)
Scincidae	*Trachylepis punctatissima*	Speckled Rock Skink	Least Concern (SARCA 2014)
Testudinidae	*Stigmochelys pardalis*	Leopard Tortoise	Least Concern (SARCA 2014)

Table 31: Mammals

Family	Scientific name	Common name	Red list category
Bovidae	*Kobus leche*	Lechwe	Near Threatened
Bovidae	*Hippotragus niger*	Sable Antelope	Vulnerable
Bovidae	*Sylvicapra grimmia*	Bush Duiker	Least Concern (2016)
Hystricidae	*Hystrix africaeaustralis*	Cape Porcupine	Least Concern
Leporidae	*Lepus microtis*	African Savanna Hare	Least Concern
Mustelidae	*Hydrictis maculicollis*	Spotted-necked Otter	Vulnerable

Appendix G-2

Palaeontological Impact Assessment

Project title	Palaeontological Impact Assessment for the proposed abstraction of water from the Suikerbosrand River at Binneplaas Boerdery in Cooperville AH, Midvaal Municipality, Gauteng Province.
Report reference	
Document prepared for	Zantow Environmental Consulting Services
Document prepared by	
Primary author	Dr. Nonhlanhla Vilakazi
Contact details	Email: nonny.vilakazi@gmail.com
Date Submitted	01/05/2026

Table 1: National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) - Requirements for Specialist Reports (Appendix 6)

Requirements of Appendix 6 – Government Notice Report (GNR) 326 of 2014(as amended)	**Relevant section in report**	**Comments where not applicable.**
1.(1) (a) (i) Details of the specialist who prepared the report	Section 2 of Report – Contact details	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 2 and Appendix B	-
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Section 1	-
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 7 – Methods and Terms of Reference	-
(cA) An indication of the quality and age of base data used for the specialist report	Section 8 – Geological and Palaeontological history	-
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 9	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Not Applicable	
(e) a description of the methodology adopted in preparing the report or carrying out the specialized process inclusive of equipment and modelling used	Sections 7, 8 and 9 Approach and Methodology	-

(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Sections 9 and 10	-
(g) An identification of any areas to be avoided, including buffers	Not Applicable	-
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 5 –Geological and Palaeontological history	-
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 8	-
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Sections 7, 8, 9	-
(k) Any mitigation measures for inclusion in the EMPr	Section 10	-
(l) Any conditions for inclusion in the the environmental authorisation	Section 10	
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10	-
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 1 and 9	-
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and	Section 9	-

(n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 9	-

DECLARATION OF INDEPENDENCE

This report has been compiled by Dr Nonhlanhla Vilakazi, of the University of Johannesburg, sub-contracted by Zantow Environmental Consulting Services, South Africa. The views expressed in this report are entirely those of the author and no other interest was displayed during the decision-making process for the Project.

Specialist: Dr Nonhlanhla Vilakazi
Signature:

EXPERTISE OF SPECIALIST

The Paleontologist Consultant: Dr Nonhlanhla Nonny Vilakazi
Qualifications: PhD (Wits University) 2015
Experience: 10 years of research and lecturing in Palaeontology
16 years PIA studies.

EXECUTIVE SUMMARY

A Palaeontological Impact Assessment was requested for the proposed abstraction of water from the Suikerbosrand River at Binneplaas Boerdery on Portion 9 of Erf 434, Farm Uitclucht (Uitvlugt), located within the Midvaal Local Municipality, Gauteng Province. To comply with the regulations of the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), a Phase 1 Palaeontological Impact Assessment (PIA) was completed for the proposed abstraction. Although most of the site is on the Quaternary (and a bit on the Ecca Group), there is a chance they can still be uncovered should there be any excavations.

1 BACKGROUND

Dr. Nonhlanhla Vilakazi was appointed by Zantow Environmental Consulting Services on behalf of Binneplaas Boerdery to conduct a Desktop Palaeontological Impact Assessment (PIA) to assess the potential palaeontological impacts of the proposed abstraction.

Binneplaas Boerdery is the registered owner of Uitclucht Farm, Portion 9, located within the Midvaal Local Municipality, in Gauteng. The property is currently utilised for agricultural purposes. Binneplaas Boerdery now proposes the abstraction of water from the Suikerbosrand river for the use and storage within three aboveground balancing dams. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles. The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations. The proposed project will also require a Water Use Licence to be registered with the Department of Water Affairs; however, this application will run separately from the application for Environmental Authorisation. The survey was conducted in accordance with the South African Heritage Resources Agency (SAHRA) Minimum Standards for a Palaeontology Study. The minimum standards clearly specify the required contents of the report of this nature. The study aimed to identify and document any palaeontological resources that may be affected by the proposed development, these will in turn assist the developer in ensuring proper conservation measures in line with the National Heritage Resource Act, 1999 (Act 25 of 1999).

1.1 Site Description

Binneplaas Boerdery is situated on the Portion 9 of Erf 434, Uitvlugt Farm in Cooperville AH, Gauteng Province. The Figure below illustrates the location of the property.

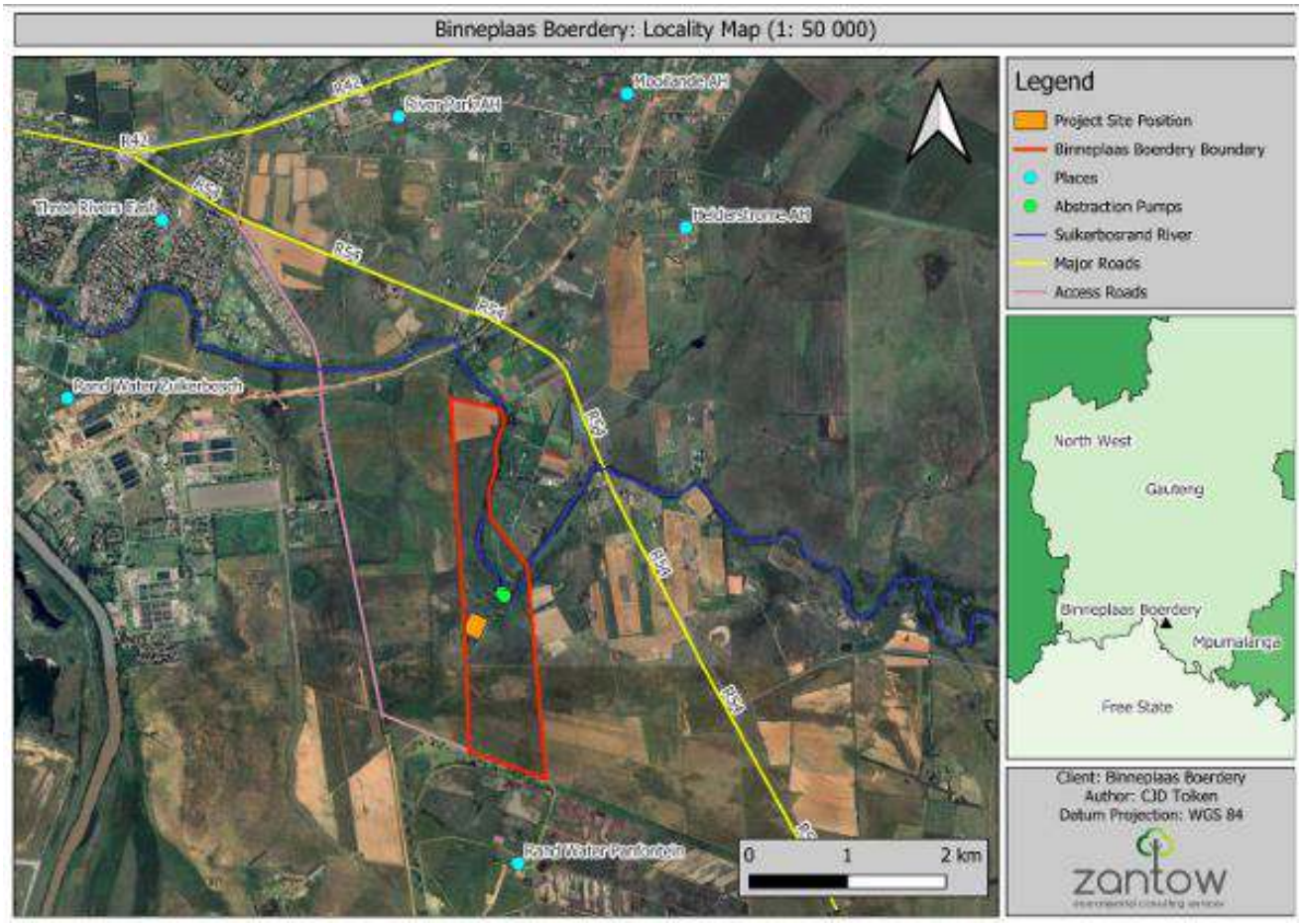

Figure 1: This figure above shows the locality map [with the red polygon illustrating the Binneplaas Boerdery Boundary, and orange being the project site position (cred: Zantow Environmental Consulting Services)].

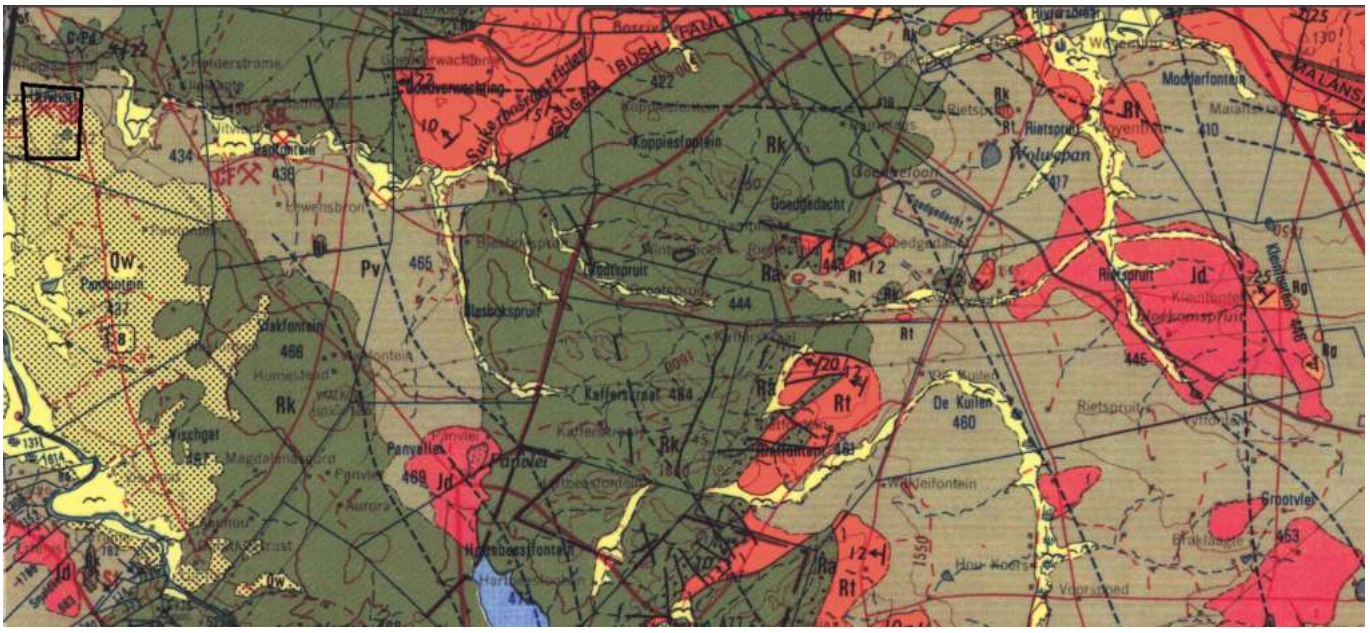

Figure 2: Geological map of the Binneplaas Boerdery where the proposed area for abstraction is indicated by the black polygon on the left. Map enlarged from the 2628 East Rand Geological Survey 1: 250 000 1986 (accessed: 30/04/2026).

2 LEGISLATIVE FRAMEWORK

a. Constitution of the Republic of South Africa, Act 108 of 1996

Section (24) establishes the right of everyone to an environment not harmful to their health or well-being and to a protected environment for the benefit of present and future generations.

Everyone has the right 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 secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development

b. National Environmental Management Act No. 107 of 1998

The proposed abstraction constitutes activities listed under the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), requiring Environmental Authorisation (EA) prior to commencement. The EIA Regulations set out the procedures for the EA application, while NEMA provides the principles guiding environmental protection and cooperative governance.

c. National Heritage Resources Act, No. 25 of 1999

This Act provides for the preservation of heritage resources that are places or objects of cultural importance according to the law, including places or objects of aesthetic, architectural, geographical, scientific, social, spiritual, linguistic and technological value. Permits are required for the disturbance, demolition or destruction of any heritage site, archaeological site or palaeontological site, burial site, grave or public monument or memorial that may be found during the construction process. The Act sets out what is defined as a cultural heritage resource, the criteria for determining its importance, and lists specific activities that may require specialist study of cultural heritage. In this context, the categories of developments listed in Section 38 (1) of the NHR Act are:

- The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50m in length;

- Any development or other activity which will change the character of the site;
- Exceeding 5000 m² in extent;
- Involving three or more existing erven or subdivisions thereof;
- Involving three or more subdivisions thereof which have been consolidated within the past five years; costs of which will exceed a sum set in terms of regulations by the South African Heritage Resources Agency (SAHRA).
- The rezoning of a site exceeding 10 000 m²
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

All excavation related activities are to be stopped if any objects are exposed during this activity, in addition, the Paleontologist must be called to the site for inspection and potential rescue. Under no conditions will any item be damaged or removed without the permission of the South African Heritage Resources Agency.

3 ASSESSMENT METHODOLOGY

In compliance with the NHRA Act No. 25 OF 1999 AND SAHRA Guidelines

- Identify, map & provide background to palaeontological finds/localities within the vicinity of the affected area via desktop assessment.
- Provide an assessment, with Field Rating criteria, of the significance of Palaeontological resources in the region via desktop assessment.
- Identify and map all possible palaeontological finds/localities within the affected footprint via pedestrian survey.
- Provide an assessment with Field Rating criteria of the potential impact by the development on palaeontological resources within the affected area.
- Provide appropriate mitigation measures and recommendations for palaeontological resources identified within the area of impact including providing identification training workshops to ECOs, chance find protocols and monitoring procedures.

4 METHODS AND TERMS OF REFERENCE

The Terms of Reference (ToR) for this study were to undertake a PIA and provide feasible management measures to comply with the requirements of SAHRA. The methods employed to address the ToR included:

a. Consultation of geological maps, literature, palaeontological databases, published and unpublished records to determine the likelihood of fossils occurring in the affected areas. Sources included records housed at the University of Cape Town and SAHRA database.

b. Where necessary, site visits by a qualified paleontologist to locate any fossils and assess their importance.

c. Where appropriate, collection of unique or rare fossils with the necessary permits for storage and curation at an appropriate facility (*not applicable to this assessment*); and

d. Determination of fossils' retrospectivity or scientific importance to decide if the fossils can be destroyed or a representative sample collected (not applicable to this assessment).

5 GEOLOGY AND PALAEONTOLOGY

The proposed area for abstraction falls within the Vryheid formation of the Ecca group within the Karoo Supergroup, and the Quaternary.

5.1 Geological context

The Karoo Supergroup is stratigraphically categorized into five primary groups: Dwyka, Ecca, Beaufort, Stormberg, and Drakensberg. The sedimentary fill has a wedge-shaped geometry, typically linked to foreland successions (Catuneanu et al., 2002). This sedimentary fill consists of the Dwyka (Late Carboniferous-Early Permian; ~302–289 Ma), Ecca (Early-Late Permian; ~289–253 Ma), Beaufort (Late Permian-Triassic; ~253–237 Ma), and the Stormberg Group (Late Triassic-Early Jurassic; ~230–183 Ma). The palaeoenvironmental contexts of the Karoo Supergroup indicate fluctuating climatic conditions as Gondwanaland migrated from high latitudes to the equator (Tankard et al., 2009), transitioning from glacial and partially marine in the Dwyka Group, to marine in the Ecca Group, and subsequently to fluvial and aeolian in the overlying Beaufort and Stormberg Groups, respectively (Smith et al., 1993; Johnson, 1976).

5.1.1 The Ecca Group

Rubidge (1858) introduced the term "Ecca" to describe clay-rich sedimentary layers that are visible in the Ecca Pass, located near Grahamstown in the Eastern Cape Province of South Africa. The Ecca Group, which is the second biggest division of the Karoo Supergroup in southern Africa, spans over 50% of the country's geographical area and is thought to have originated in the early Permian Period (Baiyegunhi, et.al., 2019). The Ecca Group consists of a clastic sequence of mudstone, siltstone, sandstone, smaller conglomerate, and coal. These rocks are found in the Karoo Basin and adjacent parts of the South African Karoo supergroups (Catuneanu, et. al., 2005; Naidoo, 2018). It is situated between the Late Carboniferous Dwyka Group and the late Permian-Middle Triassic Beaufort Group and covers a significant portion of the Permian window of Karoo supergroup lithologies (Catuneanu, et al., 2005). This Group is divided into the Pietermaritzburg Formation, the Vryheid Formation and the Volksrust Formation in the KwaZulu-Natal and Mpumalanga Provinces. The Pietermaritzburg and Volksrust Formations form the Central Ecca shale facies after merging southward (Cadle et al. 1993), and

the area in question is within the Vryheid Formation.

5.1.2 Vryheid Formation

The Vryheid Formation is a fluvio-deltaic sequence located in the northeastern region of the Karoo Basin, which transgresses the Pietermaritzburg Formation and Dwyka Group in certain areas, directly overlying the Precambrian basement. The Vryheid Formation was deposited over a total timeframe from around 290 Ma to 265 Ma. This is derived from the ages at the end of the Dwyka glacial (288 ± 3.0 and 289.6 ± 3.8 Ma; Bangert et al., 1999) and the dating of a tuff within the Tierberg Formation (269.5 ± 1.2 Ma; Belica et al., 2017), which corresponds with the top section of the Vryheid Formation.

The Vryheid Formation consists predominantly of upward coarsening cycles, believed to have been deposited as deltaic fans, with seasonal sedimentation evident in the alternation of immature sandstones, siltstones, and mudstones (Taverner-Smith et al., 1988). Van Vuuren and Cole (1979) identified as many as eight regressive cycles, with the two lowest designated as “supercycles” due to their considerable thickness. The authors emphasized the basinward thinning of sedimentary units, exemplified by the 'shaling out' of the most regressive deltaic cycle, which resulted from relatively swift facies migration from north to south and the consequent intercalation of coarse material with distal, deeper water shales, approximately 500 km south of the northern basin margin (Van Vuuren and Cole, 1979; Cadle et al., 1993).

5.1.3 Quaternary

The Quaternary System, characterized by both significant climate change and the development and spread of the human species, has been examined in much detail to define the timings of different climatic phases within this System, and the regional to global synchroneity of these phases (Pillans, 2007; Gibbard and Lewin, 2016; Head, 2019). Looking at South Africa’s geology, the Quaternary sands overlie the much older rocks. As the continent dried up during the late Quaternary, windblown sands from the Kalahari Basin were redeposited farther east, and together with fluvially carried sands from the major rivers such as the Vaal River, the sands covered some of the lower-lying areas (Partridge et al., 2006).

5.2 Palaeontological context

The Vryheid Formation of the Ecca Group is world renowned for the occurrence of coal beds which has been formed due to the accumulation of plant material over long periods of time. Plant fossils described by Bamford (2011) are; *Azaniodendron fertile, Cyclodendron leslii, Sphenophyllum hammanskraalensis, Annularia sp., Raniganjia sp., Asterotheca spp., Liknopetalon enigmata, Glossopteris* (more than 20 species), *Hirsutum* 4 spp., *Scutum* 4 spp., *Ottokaria* 3 spp., *Estcourtia* sp., *Arberia* 4 spp., *Lidgetonnia sp., Noeggerathiopsis* sp. and *Podocarpidites* sp. Bamford (2011), has noted that little data have been published on these potentially fossiliferous deposits. When they do occur, fossil plants are usually abundant and it would not be feasible to preserve and maintain all the sites, however, in the interests of heritage and science such sites should be well recorded, sampled and the fossils kept in a suitable institution. There has been an occurrence of trace fossils in this group, and this trace fossil assemblage of the non-marine *Mermia* Ichnofacies, is dominated by the *Ichnogenera umfolozia* (arthropod trackways) and Undichna (fish swimming trails), the unique mesosaurid reptiles, palaeoniscoid fish, small eocarid crustaceans, insects, trace fossils (king crab track ways, shark coprolites), palynomorphs (organic-walled spores and pollens), petrified wood (mainly of primitive gymnosperms, silicified or calcified) and sparse vascular plant remains (Glossopteris leaves, lycopods etc).

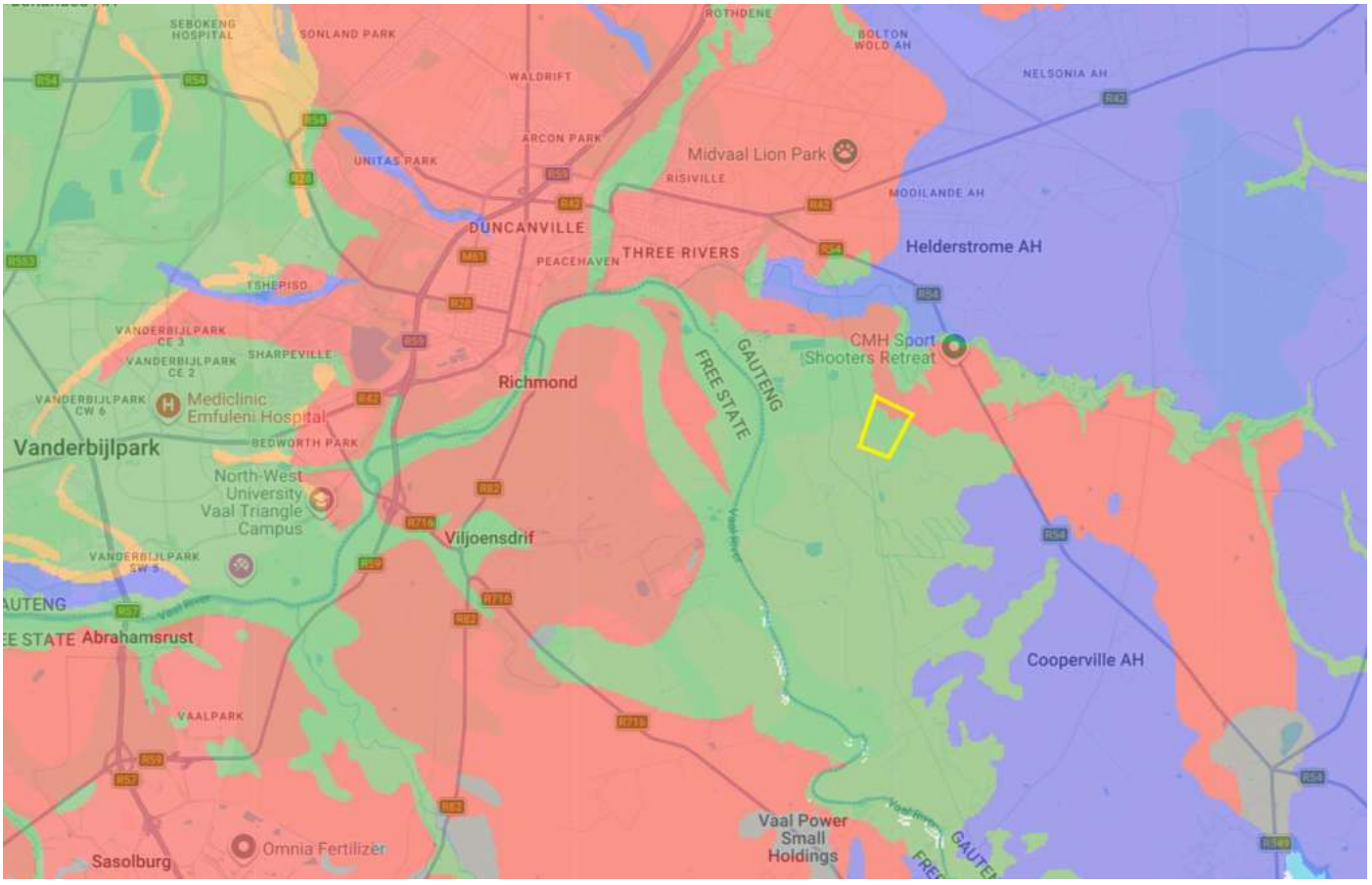

Figure 3: A Paleo-Sensitivity Map for the proposed development. The area is in red and green portions, signifying a predominantly moderate sensitivity (where the proposed abstraction is marked by a yellow polygon).

6 IMPACT ASSESSMENT

An assessment of the potential impacts on possible palaeontological resources considers the criteria encapsulated in Table 2:

Table 2: Criteria for assessing impacts

PART A: DEFINITION AND CRITERIA		
Criteria for ranking of the SEVERITY/NATU RE of environmental impacts	**H**	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action.
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints.
	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.
	H+	Substantial improvement. Will be within or better than the recommended level. Favorable publicity.
Criteria for ranking the DURATION of impacts	**L**	Quickly reversible. Less than the project life. Short term
	M	Reversible over time. Life of the project. Medium term
	H	Permanent. Beyond closure. Long term.
Criteria for Ranking the spatial scale of impacts	**L**	Localised - Within the site boundary.
	M	Fairly widespread – Beyond the site boundary. Local
	H	Widespread – Far beyond site boundary. Regional/ national
PROBABILITY (of exposure to impacts)	**H**	Definite/ Continuous
	M	Possible/ frequent
	L	Unlikely/ seldom

Table 3: Impact Assessment

PART B: Assessment		
SEVERITY/NATUR E	**H**	-
	M	Loose sediment does not preserve fossils, however, these might be exposed during excavation. This will result in medium impact.
	L	
	L+	-
	M +	-
	H +	-
DURATION	**L**	-
	M	-
	H	Where manifest, the impact will be permanent.
SPATIAL SCALE	**L**	
	M	Since the only possible fossils within the area would be fossil fauna and flora in the Ecca Group, the spatial scale will be localized within the site boundary.
	H	-
PROBABILITY	**H**	**-**
	M	It is likely that fossils will be found in the loose soils and sands that cover the area or in the overlying sandstones. There is a chance that the sediments from the Vryheid Formation, and the Quaternary might have fossil fauna but, a Fossil Chance Find Protocol should be added to the eventual EMPr.
	L	

7 SITE OVERVIEW

Figures 4-6: Photos showing examples of fossils one might find in the area.

Figure 4: Photo showing an example of *Glossopteris* plant fossils (glossopteris-browniana.jpg (1200×800). .

Figure 5: Photo showing fossil burrows generally associated with the Vryheid Formation.

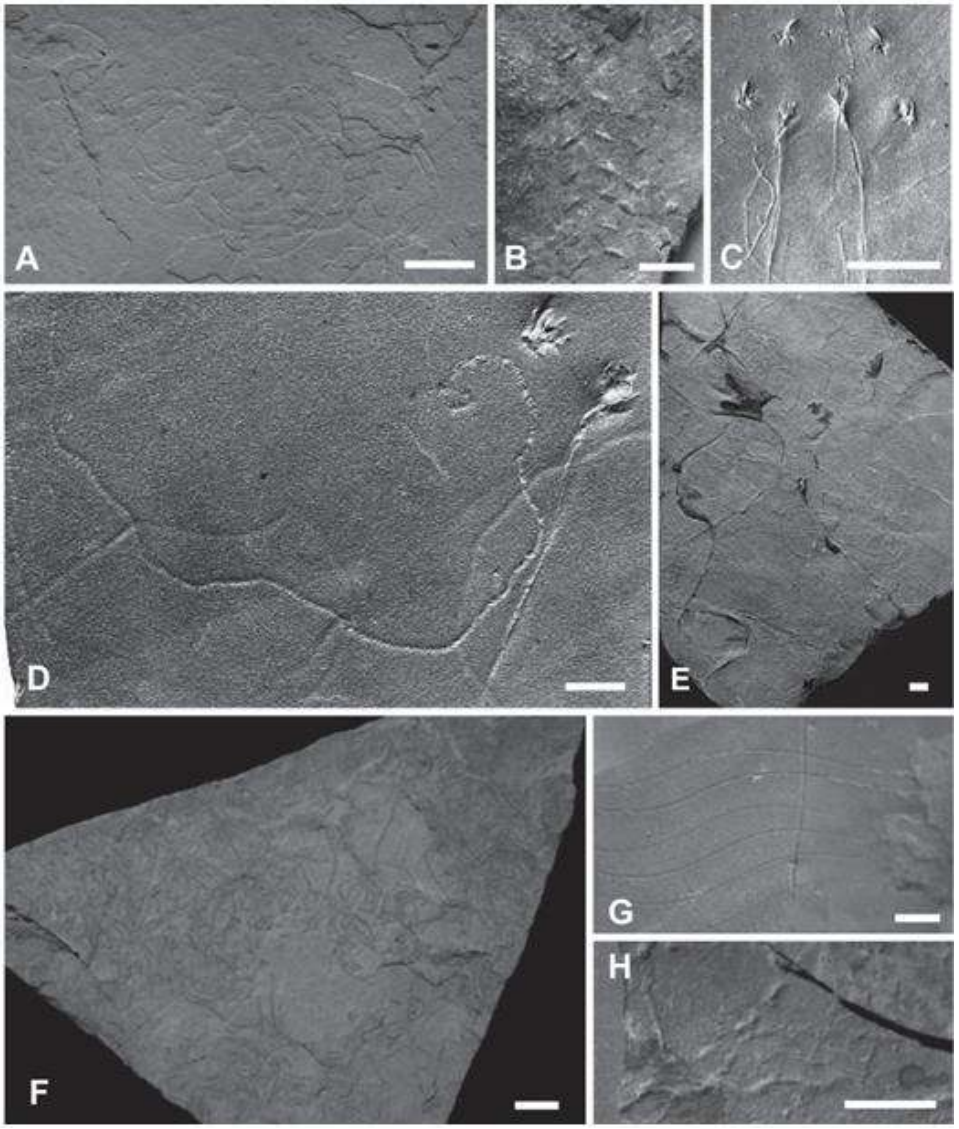

Figure 6: Photo showing examples of *Mermia* ichnofacies (after Alonso-Muruaga, et. al., 2012).

8 ASSUMPTIONS AND UNCERTAINTIES

The assumption is that the fossil potential of formation within the study area will reflect that of the region and, specifically, resemble what has previously been recorded in the study area. The Vryheid Formation is world renowned for the occurrence of coal beds and various plant fossils have been described from this formation. This formation has also trace fossil assemblages of the non-marine Mermia Ichnofacies, and is dominated by the *ichnogenera Umfolozia* (arthropod trackways) and *Undichna* (fish swimming trails), palaeoniscoid fish, small eocarid crustaceans, insects, trace fossils, palynomorphs (organic-walled spores and pollens), petrified wood (mainly of primitive gymnosperms, silicified or calcified) and sparse vascular plant remains (*Glossopteris* leaves, lycopods etc). The unique mesosaurid reptile, Mesosaurus may also be present in the development site. This Group has a moderate palaeontological sensitivity (although the SAHRIS map indicates high sensitivity). Regardless of the sparse and sporadic occurrence of fossils in this biozone a single fossil can have a huge scientific importance as many fossil taxa are known from a single fossil.

9 RECOMMENDATION

The impact of the abstraction is LOW. It is therefore recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required for the commencement of this development, pending the discovery or exposure of any fossil remains during the excavation phase. Should fossil remains be discovered during any phase of abstraction, either on the surface or exposed to fresh excavations, the ECO responsible for these developments should be alerted immediately. Such discoveries ought to be protected (preferably *in situ*) and the ECO should alert SAHRA (South African Heritage Research Agency) for appropriate mitigation (e.g. recording, sampling or collection) can be taken by a professional paleontologist. The specialist involved would require a collection permit from SAHRA. Fossil material must be curated in an approved collection (e.g. museum or university collection) and all fieldwork and reports should meet the minimum standards for palaeontological impact studies developed by SAHRA.

10 CHANCE FIND PROTOCOL

Monitoring Programme for Palaeontology-to commence once extraction activities begin.

To commence once the excavations or abstraction activities begin**.**

a. The following protocol must be followed in the case of abstraction revealing new palaeontological material:

b. The officer responsible (e.g. the ECO or contractor manager) shall inform SAHRA of discoveries during excavation, found by the Contractor Staff.

c. If a major *in situ* occurrence is exposed, the excavation will immediately cease in that area so that the discovery will not be disturbed or altered in any way until the designated specialist, or scientists have had a reasonable opportunity to investigate the finding.

d. If the palaeontologist is convinced that this is a major find, an inspection of the site must be scheduled as soon as possible to minimize delays to the development.

e. From the site visit, the palaeontologist will make one of the following recommendations:

f. The material is of no value so development can proceed, or:

g. Fossil material is of some interest and a representative sample should be collected and put aside for further study and to be incorporated into a recognized fossil repository after a permit was obtained from SAHRA for the removal of the fossils, after which the development may proceed, or:

h. The fossils are scientifically important, and the palaeontologist must obtain an SAHRA permit to excavate the fossils and take them to a recognised fossil repository, after which the development may proceed.

If any fossils are found, then a schedule of monitoring will be set up between the developer (and ECO) and palaeontologist in case of further discoveries.

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Appendix G-3

Agriculture Compliance Statement

AGRICULTURE COMPLIANCE STATEMENT IN SUPPORT OF THE APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION FOR THE DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND A HYDROPOWER-ASSISTED IRRIGATION SYSTEM AT

BINNEPLAAS BOERDERY

APPLICATION REF: REF 002/26-27/E0011

Report Number: 4252-ZANBB-2026

Report Date: 9th April 2026

General Information	
Report Name:	**Agriculture Compliance Statement in Support of the Application for an Environmental Authorisation for the Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and a Hydropower-Assisted Irrigation System at Binneplaas Boerdery**
Site Visit Date:	15th January 2026
Report Date:	9th April 2026
Environmental Consultant	**Zantow Environmental Consulting Services CC** Colosseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911 PO Box 3858 Vanderbijlpark, 1911 **Contact Person:** Karien Zantow Tel: 083 384 3641 Fax: 016 932 4976 Email: karien@zantow.co.za
Client:	**Binneplaas Boerdery** Portion 9 of Erf 434 Uitclucht Farm Cooperville AH Vereeniging 1911 **Contact Person:** Frik Roets Cell: 082 977 1128 Email: frikroets@vodamail.co.za
Report Compiled by:	Karien Zantow
SACNASP Registration:	400114/14
EAPASA Registration:	2019/1871
Report Nr:	4252-ZANBB-2026

DECLARATION AND REVIEW

I, **Karien Zantow** as an independent consultant and specialist compiled this report and declare that it correctly reflects the results and findings made during the site visit an assessment. I further declare that;

- I act as an independent specialist in terms of the associated application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to the application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
  I have no, and will not engage in conflicting interests in the undertaking of the activity;
  I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority
  All the particulars furnished by me in this report are true and correct; and
  I realise that a false declaration is an offence in terms fo regulation 48 and is punishable in terms of Section 24F of the Act.

Karien Zantow
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871

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INTRODUCTION AND BACKGROUND

Binneplaas Boerdery is located on Portion 9 of Erf 434 Uitvlucht Farm in Cooperville AH, Gauteng. The property is within the jurisdiction of the Midvaal Local Municipality within the Sedibeng District Municipality, in the Gauteng province of South Africa. The property is zoned for agricultural land use and is currently being utilized as an agricultural holding. The Suikerbosrand River runs through the farm property, forming a natural watercourse within the site.

Binneplaas Boerdery proposes the construction of three aboveground balancing dams. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles.

The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations.

The proposed construction of balancing dams for electricity generation triggers the following listed activities within the GN. R 983 Listing Notice 1:

Table 1. Activities triggered in GN. R 983.

Legislation, policy of guideline	Description of compliance
GN. R 983, 8 December 2014. Listing Notice 1, Activity 1	" the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
GN. R 983, 8 December 2014. Listing Notice 1, Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
GN. R 983, 8 December 2014. Listing Notice 1, Activity 27	"The clearance of an area of 1 hectares 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."

Zantow Environmental Consulting Services CC (Zantow Environmental) has been appointed by Binneplaas Boerdery as an Independent Environmental Assessment Practitioner (EAP) to facilitate the application processes to obtain the required environmental authorisation.

As part of the application process, the National Web based Environmental Screening Tool (https://screening.environment.gov.za/screeningtool/) was used to generate a Screening Tool Report. The Screening Tool Report thus indicated that the site selected for the storage and handling of dangerous goods has a high sensitivity for the agricultural theme. Although the National Screening Tool Report did not include the requirement for a specialist report in terms of the Agricultural Theme, applicable requirements in terms of the Protocols and/or Appendix 6 of the EIA Regulations, 2014 (as amended) must be met.

The "*Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*" ("the Protocols"), clearly states that "prior to commencing with a specialist assessment, the current use of the land and environmental sensitivity of

the site under consideration, identified by the screening tool, must be confirmed by undertaking a site sensitivity verification.

The said verification was undertaken by Zantow Environmental Consulting Services, and it was confirmed that the site selected for the proposed development has **very high agricultural value**.

Using existing information, desktop assessments and the site visit, this Compliance Statement was compiled in line with the requirements set out in the Protocol for the specialist assessment and minimum report content requirements for Environmental Impacts on Agricultural resources.

1. DATA LIMITATIONS AND STUDY GAPS

Assumptions and conclusions made in terms of this compliance statement are based on the data and historic information provided to the specialist as part of application process.

Data and information obtained by means of the desktop assessment and associated specialist assessments (as provided) were deemed accurate and correct.

2. METHODOLIGY

A desktop study was conducted to determine the agricultural potential for the site selected for the proposed development based on the area's climate, topography and geology. The site's current vegetation and terrestrial biodiversity composition was based on the findings of a terrestrial biodiversity assessment which was undertaken by a suitable qualified specialist (Excellence Ecology) in preparation for the current application.

The following information sources were consulted to compile this report:

- Long term Grazing Capacity Map of South Africa – Department of Agriculture, Forestry and Fisheries (GN 898, Dated 31 August 2018)
- Climate data provided by Meteoblue.com and Climate-data.org
- Terrestrial Biodiversity Site Sensitivity Verification – Excellence Ecology
- Vegetation Map of South Africa – Munica and Rutherford, 2006

3. DESKTOP AND SITE ASSESSMENT

1.1. Geology and Soil

The Cooperville AH area, located near Vereeniging, lies within the Madzaringwe formation and forms part of the Karoo supergroup. The main lithology of the area is siliciclastic rocks. Siliciclastic rocks are a prominent group of sedimentary rocks that include siltstone, sandstone, and conglomerate. These rocks primarily form from the accumulation and consolidation of mineral grains, primarily silicate minerals, and are significant reservoirs for water, oil, and natural gas. They also serve as repositories for valuable minerals such as diamonds and gold, making them economically important.

1.2. Climate

In general, Vereeniging has a warm, temperate climate. Rainfall is highly seasonal, with summertime seeing the most precipitation. The region is classified as Cwb under the Köppen–Geiger climate classification. The mean annual rainfall is roughly 752 mm, and the average annual temperature is 17.0 °C.

1.3. Vegetation, current land use and agricultural activities

The site selected for the proposed activity was assessed by an external specialist (Excellence Ecology) as part of a Terrestrial Biodiversity Assessment. Based on the findings of the assessment it was determined that the site set out for the proposed activity is situated within the Grassland biome, which is characterised by herbaceous vegetation of relatively short and simple structure that is dominated by graminoids, usually of the family Poaceae. Woody plants are rare (usually low to medium-sized shrubs) or absent or are confined to specific habitats, such as smaller escarpments or koppies. Core grassland areas usually have deep, fertile soils although a wide spectrum of soil types occurs. Precipitation is strongly seasonal, and the growing season lasts approximately half the year.

The study area falls within the Soweto Highveld Grassland and is closely bordered with the Central Free State Grassland vegetation types, as defined by the South African National Biodiversity Institute (2018). The Soweto Highveld Grassland is underlain by shale, sandstone and mudstone of the Madzaringwe Formation within the Karoo Supergroup, as well as intrusive dolerites of the Karoo Dolerite Suite, with the Volksrust Formation occurring to the south and older formations of the Transvaal Supergroup, Ventersdorp Supergroup and Witwatersrand Supergroup present to the west; soils are typically deep, reddish and associated with Enumeration Area (Ea), Ba and Bb land types. The Central Free State Grassland comprises sedimentary mudstones and sandstones of the Adelaide Subgroup within the Beaufort Group, as well as formations of the Ecca Group in the northern portions, giving rise to vertic, melanic and red soils, including Arcadia, Bonheim, Kroonstad, Valsrivier and Rensburg soil forms, predominantly associated with the Dc land type, while less common intrusive dolerites of the Karoo Dolerite Suite support dry, clayey soils typical of the Ea land type.

The project area is representative of these vegetation units. The property has been cultivated and therefore there is less natural vegetation present on site. The area set out for the construction of the three (3) balancing dams has no natural vegetation left due to agriculture cultivation. The potential for agricultural development within this area is considered to be very high. The proposed project would greatly improve agricultural capability and production. The generation of electricity from the balancing dams would provide greater economic stability for Binneplaas Boerdery. The project incorporates green technology through the use of hydropower generators that allow Binneplaas Boerdery to be self-sustainable.

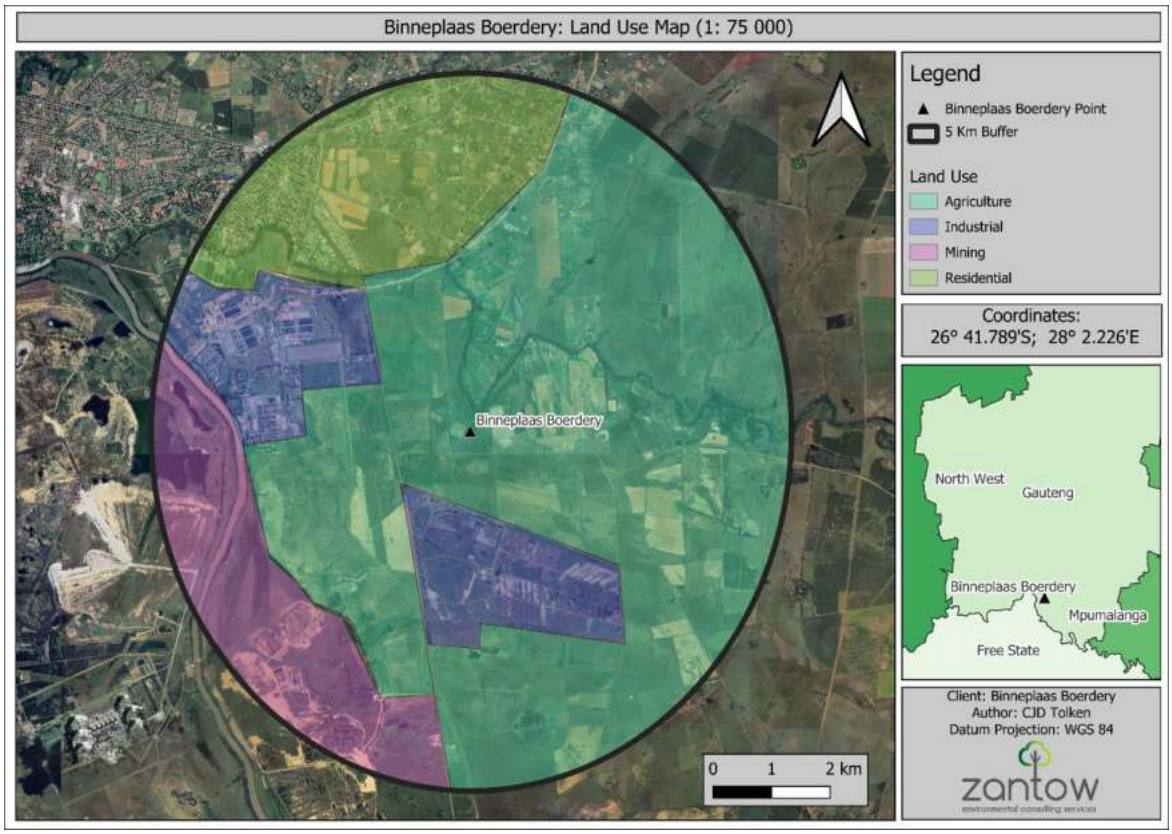

Figure 1: Agricultural Land Use

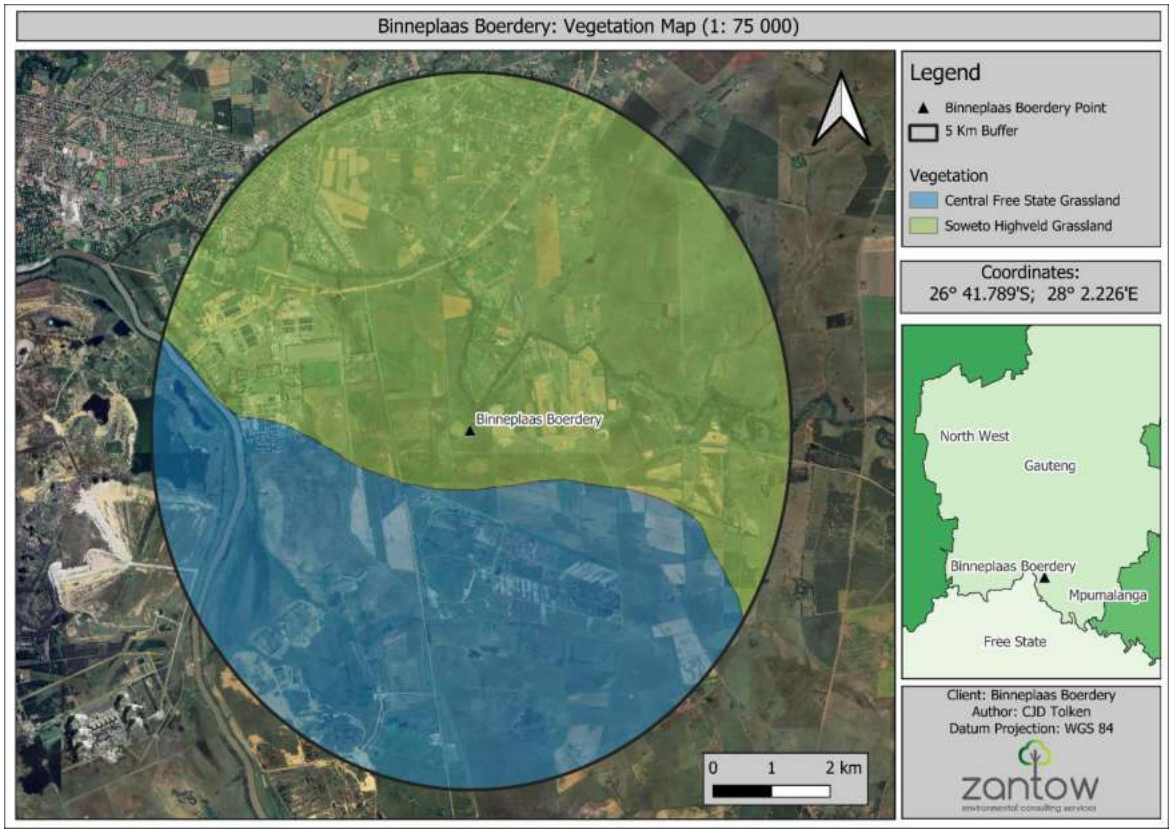

Figure 2: Site Vegetation

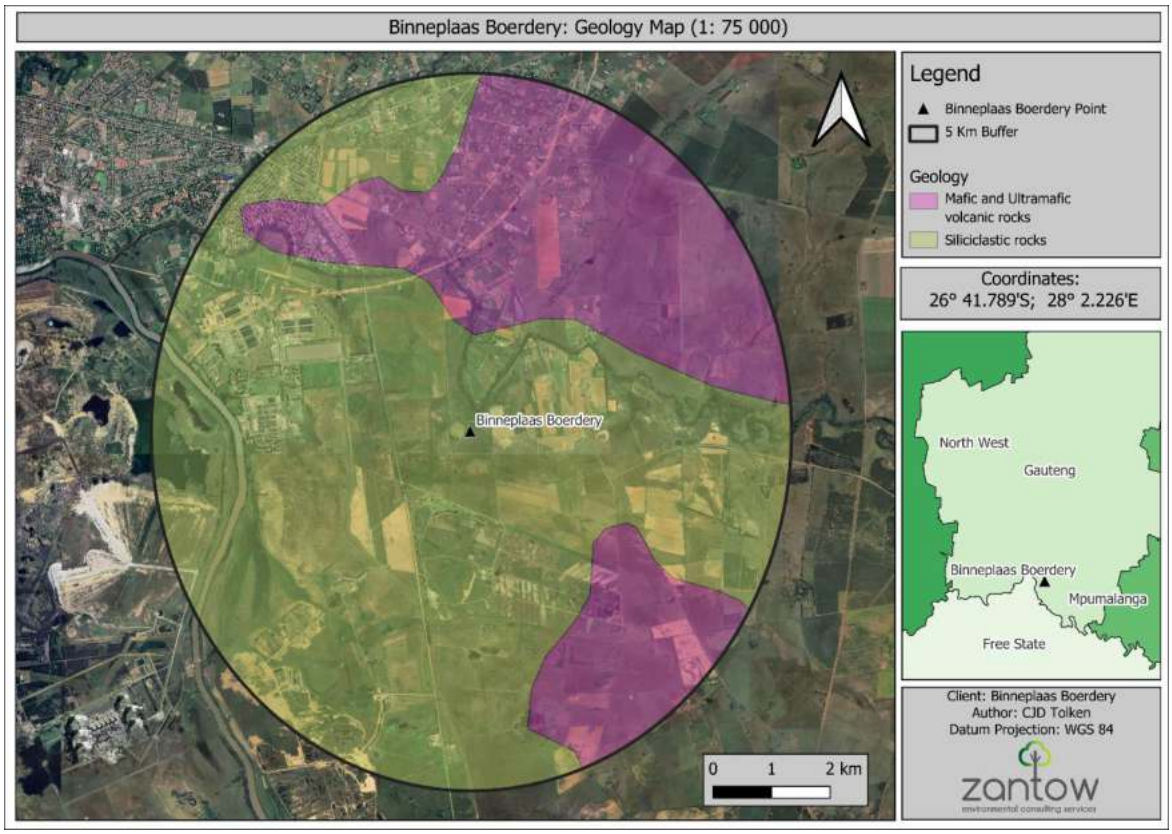

Figure 3. Geology and soil.

4. SITE VISIT

A site visit was undertaken in January 2026 and photographs documenting the site conditions are included in this report. Based on the findings of the site inspection, the proposed development area was confirmed to possess very high agricultural potential and forms part of an existing agricultural production landscape. The selected location was identified as suitable due to its close proximity to the existing and proposed irrigation circles, which allows for efficient transfer and distribution of stored water from the balancing dam system.

The proposed development is expected to support and enhance agricultural productivity through improved irrigation water security and more efficient water management practices. The integration of cascading balancing dams and hydropower-assisted pumping technology will facilitate a more energy-efficient and economically sustainable water transfer system for irrigation purposes. In addition, the incorporation of hydropower generation within the system represents the use of renewable energy technology, thereby reducing reliance on conventional electricity sources for pumping operations and contributing toward improved operational sustainability.

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Figure 4: North view of the selected site

Figure 5: North-east view of the selected site

Figure 6: East view of the selected site

Figure 7: South-east view of the selected site

Figure 8: South view of the selected site

Figure 9: South-west view of the selected site

Figure 10: West view of the selected site

Figure 11: North-west view of the selected site

5. SCREENING TOOL COMPARISON AND CONCLUSION

According to the National Screening Tool, the site selected for the proposed project has a **very high sensitivity** for the Agricultural Theme.

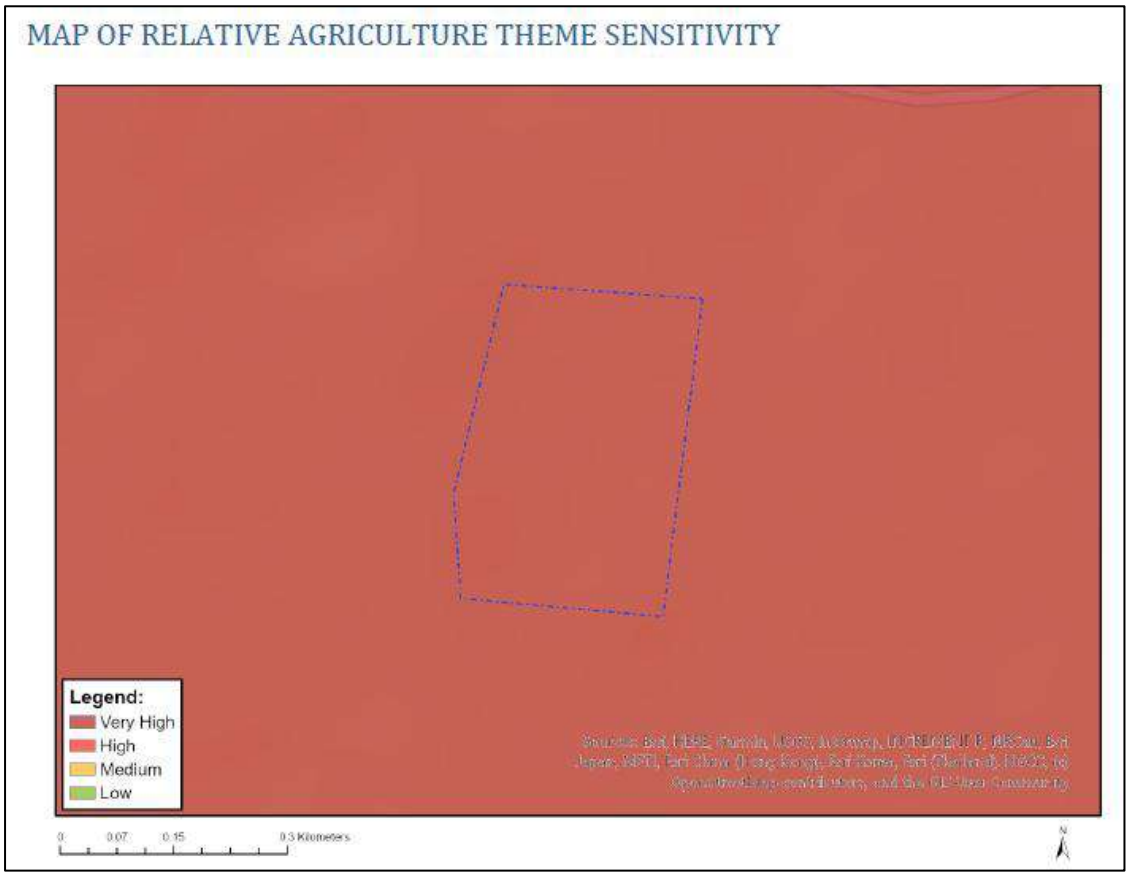

Figure 12: National Screening Tool - Agricultural Theme

Based on the findings of the assessment and available information it was determined that the site in its current state in fact has agricultural activities being undertaken and there is a very high sensitivity to it. The site is already used and zoned for agricultural use and the proposed activity would increase the agricultural potential of the area. In addition, the proposed area selected for the construction of the three (3) balancing dams is ideally located to promote agricultural yield.

Although the proposed development will permanently transform a portion of land with high agricultural potential for dam and associated infrastructure development, the infrastructure is directly linked to the enhancement and sustainability of agricultural production on the property.

Justification for Use of High Agricultural Land

- infrastructure is agricultural-support infrastructure directly linked to farming operations.
- The project improves irrigation reliability and agricultural resilience.
- Alternative locations would reduce operational feasibility or increase environmental impacts.
- The selected site minimises pumping distances and energy requirements.

Although the proposed development is located within an area identified as having high agricultural sensitivity, measures have been incorporated into the project design to minimise environmental disturbance and reduce impacts on agricultural resources. The selected development footprint is located within an area that has historically been cultivated and previously disturbed through agricultural activities, thereby avoiding the transformation of undisturbed natural areas. The layout and footprint of

the proposed infrastructure have furthermore been optimised to limit the extent of land disturbance required for construction activities.

The proposed cascading dam configuration was specifically selected to reduce the required embankment heights and overall structural footprint when compared to a single large storage dam alternative. This approach not only improves structural efficiency and safety but also reduces bulk earthworks and associated land disturbance. In addition, the dams have been designed as off-channel storage systems, thereby minimising direct hydrological and ecological impacts on the Suikerbosrand River and reducing interference with natural flow processes.

The project further incorporates resource efficiency principles through the reuse of excavated material generated during dam construction. Suitable excavated material will be reused in the construction of dam embankments, while excess material will be processed for beneficial use as construction material. This approach reduces the need for external borrow areas and minimises disturbance associated with the extraction and transport of virgin construction materials.

It is the opinion of the specialist that the proposed development area is located within land classified as having very high agricultural sensitivity, reflecting favourable soil characteristics and strong agricultural land capability. Although the proposed development will result in the transformation of a portion of agricultural land for supporting infrastructure, the activity is directly linked to and supportive of agricultural production on the property. The proposed balancing dams and associated irrigation infrastructure are expected to enhance agricultural water security, improve irrigation efficiency and support increased agricultural productivity and long-term farming sustainability.

Furthermore, the development has been designed to minimise impacts through the use of previously cultivated areas, optimisation of the infrastructure footprint, the implementation of an off-channel dam configuration and the incorporation of resource-efficient design measures. Based on the findings of the assessment, and subject to the implementation of the recommended mitigation and management measures, the proposed development is considered acceptable from an agricultural perspective and suitable to proceed at the proposed location.

According to the National Environmental Screening Tool, the proposed development area falls within an area classified as having very high agricultural sensitivity in terms of the Agricultural Theme.

Based on the desktop assessment, specialist review, available agricultural information and findings from the site verification assessment, it was confirmed that the property currently supports agricultural activities and that the surrounding land possesses high agricultural production potential. The site has historically been utilised for agricultural cultivation and portions of the proposed development footprint have already been transformed through previous agricultural activities.

The proposed development consists of agricultural support infrastructure directly associated with the enhancement and sustainability of irrigated agricultural production on the property. Although the development will result in the transformation of a portion of land classified as having high agricultural potential, the proposed balancing dams and associated infrastructure are required to secure water supply for irrigation purposes and improve the long-term viability and resilience of agricultural operations on the farm.

The proposed cascading off-channel dam design further reduces potential impacts through optimisation of the natural topography, reduced embankment heights and minimisation of bulk earthworks compared to alternative large-scale storage configurations. In addition, the development incorporates resource efficiency principles through the reuse of excavated material for dam wall construction and the

beneficiation of excess material into G5 construction material, thereby reducing waste generation and the need for external borrow material sources.

The selected site is considered appropriate from an operational perspective due to its proximity to the existing and proposed irrigation areas, which reduces pumping distances, improves irrigation efficiency and supports the integration of hydropower-assisted pumping technology within the agricultural system.

Based on the findings of the assessment, it is the opinion of the specialist that although the site is located within an area of high agricultural sensitivity, the proposed development is directly supportive of agricultural production and is unlikely to result in unacceptable impacts on agricultural resources, provided that appropriate mitigation and management measures are implemented.

Conclusion

It is the opinion of the specialist that the proposed development site is located within an area of high agricultural sensitivity; however, the proposed activity constitutes agricultural support infrastructure intended to improve agricultural water security, irrigation efficiency and long-term agricultural productivity on the property.

The development is expected to provide a positive net agricultural benefit through improved irrigation reliability, enhanced crop production potential and increased resilience of farming operations to climatic variability and drought conditions. Furthermore, the use of renewable energy principles through hydropower-assisted pumping contributes to improved sustainability and operational efficiency within the agricultural sector.

Based on the findings of the assessment, the proposed development is considered acceptable from an agricultural perspective and may proceed, subject to the implementation of appropriate environmental management and mitigation measures.

Recommendations

The following recommendations should be implemented during the construction and operational phases of the development:

- Disturbance areas should be restricted to the approved development footprint as far as reasonably practicable.
- Topsoil stripped during construction activities should be stockpiled separately and reused for rehabilitation purposes where applicable.
- Appropriate erosion and stormwater control measures should be implemented to prevent soil loss and sediment transport.
- Disturbed areas not required for operational purposes should be rehabilitated and stabilised following construction.
- Construction activities should be managed to prevent contamination of surrounding soils and water resources.
- Excavated material should, where suitable, be reused within the project to minimise waste generation and reduce the need for external borrow materials.
- Vegetation clearing should be limited to the minimum area required for construction.
- Regular inspection and maintenance of dam embankments, spillways and associated infrastructure should be undertaken to ensure long-term structural integrity and operational efficiency.

ANNEXURE A

SPECIALIST CV

zantow
environmental consulting services

KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University

KARIEN ZANTOW

PROFESSIONAL CAREER

2012 - Current

Zantow Environmental Consulting Services, MD

Karien is the founding member and has taken the position of Managing Director.

2006 -2012

ArcelorMittal South Africa Vanderbijlpark Works Environmental Manager

After one year Karien was promoted from Environmental Engineer to the Environmental Manager at ArcelorMittal Vanderbijlpark Works. The functions included the management of a 10 staff compliment department responsible for all environmental compliance and management functions.

She served on the Management Structure of Vanderbijlpark Works and was responsible to advise Top Management on strategic Environmental Management trends, changing legislation and ensuring legal compliance and highlight risks and provide solutions. She was responsible to drive the works to environmental compliance and ensure continued

improvement of the environmental footprint. This included the planning, prioritisation and funds management of the various environmental requirements. Under her management period remediation of various legacy issues commenced and was completed. This included the remediation of a waste disposal site and various contaminated land and dams, both organic and inorganic on a large scale. All functions related to waste, water and air quality management, from monitoring to licensing fell under her responsibility.

2004 -2006

Sappi Kraft Ngodwana

Environmental Engineer

As environmental engineer at Sappi, Karien was responsible for all aspects of environmental management in the industrial facility. This included but is not limited to the maintenance of the ISO 14001 Certification, monitoring of the plant environmental systems and operation to maintain compliance with environmental permits and other environmental requirements. This required the technical support and guidance to all levels of employees including top management. She was also the owner of all new environmental projects (example establishment of the continuous air emissions monitoring system,

ambient air quality monitoring station, waste minimisation, invader plant eradication and recycling initiatives). A key function was to manage and remediate the soil on the effluent irrigation pastures and develop and implement odour reduction strategies. This function further included the development of environmental procedures, reporting and recordkeeping. Experience was also gained in the development of the IWWMP and the Water Use License application and the associated Reserve Determination. Waste

management functions included the day to day waste management and disposal practices, waste minimisation projects as well as the landfill extension project. Karien was responsible for the entire legal compliance program, public communication, and governmental liaison.

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FIELDS OF COMPETENCE

National Environmental Management Act, National Environmental Management: Air Quality Act National Environmental Management: Waste Act, Environmental Conservation Act, 1998 National Water Act, 1998 Gas Act and regulations NEMA EIA regulations and EMF; Promotion to Access of Information Act; Applicable SANS standards Applicable Regulations

KEY EXPERIENCE

- Training and Awareness

Numerous training courses have been prepared and presented to customers, mainly in the mining and industrial sectors. The courses and lectures included all aspects on Environmental Management, ISO 14001, EMPr, Waste Management and Water Management. Some courses also addressed environmental legislation and liability for employees and directors. Training material has also been developed and provided to customers to be used as awareness training material.

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- Site Assessments, Remediation Plans and ARPs

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- Vaal Santiwaryware
- Cobra Watertech
- Lixil Krugersdorp
- JJ Maritz and Son Mining
- Cape Gate
- Delmore Extension
- New Way Power

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FIELDS OF EXPERTISE

General

- Legal compliance audits
- Monitoring and Reporting programs
- Training
- Environmental Control Officer functions
- Environmental Monitoring and Auditing
- Annual Remediation Plans

Environmental Authorisation Applications

- Environmental Impact Assessment
- Environmental Management Plans
- Water Use License Application
- Waste License Applications
- Atmospheric Emission License applications
- Rectification Applications

Waste

- Waste Classification
- Integrated Waste Management Plans
- Waste Minimization Planning and implementation
- Waste Disposal Site Management and operational Plans
- Waste disposal site closure and remediation plans

Land Management

- Site Characterization

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- Remediation Plans
- License and authorization application

Air Quality

- Compilations and Verification of Emissions Inventory
- Emission Reduction Strategies
- NAEIS Reports, Annual Reports
- Compliance Inspections and Audits
- Postponement Applications and Amendments
- Monitoring In Accordance with New Emission Limits Standards Requirements

Water

- Water License Applications
- Integrated Waste and Water Management Plans (IWWMP)
- Storm Water Management Plans
- Water balances
- Borehole monitoring
- Surface water monitoring
- Data management and reporting

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/1871

Herewith certifies that

KARIEN ZANTOW

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 April 2026

Expires: 31 March 2027

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Karien Zantow

Registration Number: 400114/14

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **12 March 2014** Expires **31 March 2027**

President of Council

Chief Executive Officer

To verify this certificate scan this code

Appendix G-4

Civil Aviation Compliance Statement

CIVIL AVIATION THEME COMPLIANCE STATEMENT IN SUPPORT OF APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION FOR THE DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND A HYDROPOWER-ASSISTED IRRIGATION SYSTEM AT BINNEPLAAS BOERDERY,

APPLICATON REF: 002/26-27/E0011

Report Number: 4302-ZANBB-2026

Report Date: 9th April 2026

General Information	
Report Name:	Civil Aviation Theme Compliance Statement in Support of the Application for an Environmental Authorisation for the Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and a Hydropower-Assisted Irrigation System at Binneplaas Boerdery
Site Visit Date:	15th January 2026
Report Date:	9th April 2026
Environmental Consultant	**Zantow Environmental Consulting Services CC** Colosseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911 PO Box 3858 Vanderbijlpark, 1911 **Contact Person:** Karien Zantow Tel: 083 384 3641 Fax: 016 932 4976 Email: karien@zantow.co.za
Client:	**Binneplaas Boerdery** Portion 9 of Erf 434 Uitclucht Farm Cooperville AH Vereeniging 1911 **Contact Person:** Frik Roets Cell: 082 977 1128 Email: frikroets@vodamail.co.za
Report Compiled by:	Karien Zantow
SACNASP Registration:	400114/14
EAPASA Registration:	2019/1871
Report Nr:	4302-ZANBB-2026

DECLARATION AND REVIEW

I, **Karien Zantow** as an independent consultant and specialists compiled this report and declare that it correctly reflects the results and findings made during the site visit an assessment. I further declare that;

- I act as an independent specialist in terms of the associated application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to the application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
  I have no, and will not engage in conflicting interests in the undertaking of the activity;
  I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority
  All the particulars furnished by me in this report are true and correct; and
  I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of Section 24F of the Act.

Karien Zantow
Environmental Specialist
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871

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INTRODUCTION AND BACKGROUND

Binneplaas Boerdery is located on Portion 9 of Erf 434 Uitvlucht Farm in Cooperville AH, Gauteng. The property is within the jurisdiction of the Midvaal Local Municipality within the Sedibeng District Municipality, in the Gauteng province of South Africa. The property is zoned for agricultural land use and is currently being utilized as an agricultural holding. The Suikerbosrand River runs through the farm property, forming a natural watercourse within the site.

Binneplaas Boerdery proposes the construction of three aboveground balancing dams. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles.

The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations.

The proposed construction of balancing dams for electricity generation triggers the following listed activities within the GN. R 983 Listing Notice 1:

Table 1. Activities triggered in GN. R 983.

Legislation, policy of guideline	Description of compliance
GN. R 983, 8 December 2014. Listing Notice 1, Activity 1	" the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
GN. R 983, 8 December 2014. Listing Notice 1, Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
GN. R 983, 8 December 2014. Listing Notice 1, Activity 27	"The clearance of an area of 1 hectares 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."

Zantow Environmental Consulting Services CC (Zantow Environmental) has been appointed by Binneplaas Boerdery as an Independent Environmental Assessment Practitioner (EAP) to facilitate the application processes to obtain the required environmental authorisation.

As part of the application process, the National Web based Environmental Screening Tool (https://screening.environment.gov.za/screeningtool/) was used to generate a Screening Tool Report. The Screening Tool Report thus indicated that the site selected for the expansion and modification has a high sensitivity for the civil aviation theme. Although the National Screening Tool Report did not include the requirement for a specialist report in terms of the Civil Aviation Theme, applicable requirements in terms of the Protocols and/or Appendix 6 of the EIA Regulations, 2014 (as amended) must be met.

The "*Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*" ("the Protocols"), clearly states that "prior to commencing with a specialist assessment, the current use of the land and environmental sensitivity of the site under consideration, identified by the screening tool, must be confirmed by undertaking a site sensitivity verification.

The said verification was undertaken by Zantow Environmental Consulting Services (Zantow Environmental), and it was confirmed that the site selected for the proposed development has **low to negligible effects on Civil Aviation**.

Using existing information, desktop assessments and a site visit, this Compliance Statement was compiled in line with the requirements set out in the Protocol for the specialist assessment and minimum report content requirements for Environmental Impacts on Civil Aviation.

1. DATA LIMITATIONS AND STUDY GAPS

Assumptions and conclusions made in terms of this compliance statement are based on the overall site layout and construction of building around the site along with the site visit.

Data and information obtained by means of the desktop assessment and site visit were deemed accurate and correct.

2. METHODOLOGY

A desktop study was conducted to determine the Civil Aviation potential for the site selected for the proposed development based on the available data, the area's topography and the outline of building around the selected site. The site's current Civil Aviation status was based on the findings of the screening tool report generated on 01/04/2026 at 09:47:14.

The following information was used to compile the statement report.

- Existing spatial databases were used to determine the location of Civil Aviation installations in relation to the proposed project area, and to identify preliminary areas of concern in terms of impacts to Civil Aviation installations;
- The proposed project site and footprint were plotted on the Screening Tool to identify the sensitivity allocated;
- A site visit was undertaken to confirm the current land use and the environmental sensitivity as it relates to Civil Aviation.

3. DESKTOP AND SITE ASSESSMENT

3.1. Civil Aviation assessment of the site.

The proposed area selected for the project will be located within the bounds of the existing Binneplaas Boerdery property. The proposed activity is not expected to have any direct or indirect impact on the operation or safety of any civil aviation aerodrome in the surrounding area. The activity will not produce vertical infrastructure or air pollutants caused by the activity that could compromise aviation operations or safety.

The RSA Airspaces in a 3D data KMZ file is an initiative undertaken by the ATNS to illustrate the definitions and complexities of airspace, routes, aerodromes and navigational facilities within South Africa to the public in the interest of safety. By making use of this 3D modelled KMZ files, possible flight routes and aerodrome localities could be plotted. The following information was obtained with the use of the database:

- Lichenry Helistop, approximately 8 km from the facility.
- RB Helistop, more than 15 km from the facility.

- Sigma helistop, more than 15 km from the facility.
- Vereeniging FREQ FAVV, 15.5 km from the facility.
- Roodua R311, more than 15 km from the facility.
- Kwa Siza Bantu R 054, more than 15 km from the facility.
- Maritz Farm Strip R 025, more than 15 km from the facility.
- Kronebloem R 204, more than 15 km from the facility.

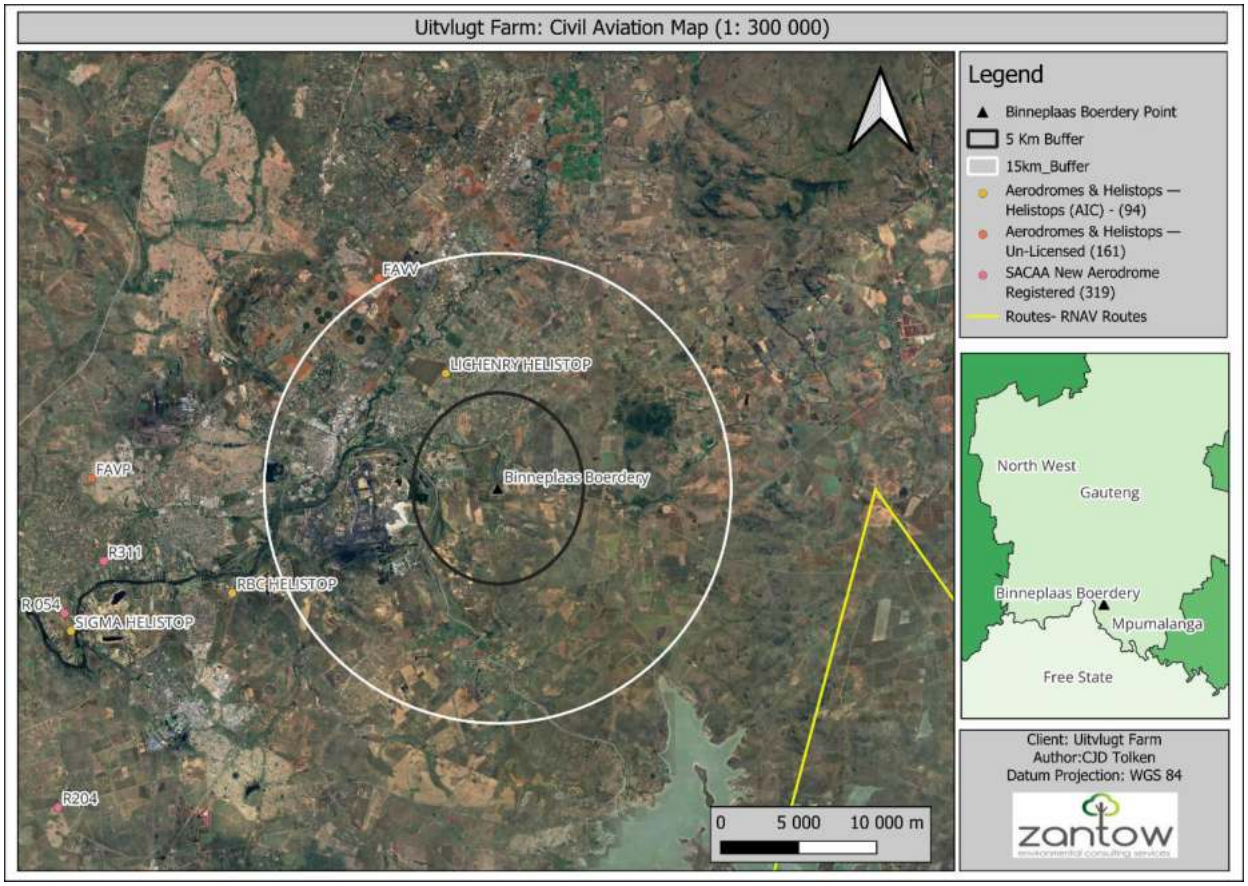

Figure 1: Civil Aviation Layout Map

4. SITE VISIT

In January 2026, a site visit was conducted. This report includes site images that were taken during the site visit. The existing site is used for agricultural activities, and the introduction of the dam and irrigation infrastructure will be on the same property. The proposed infrastructure will be designed in a manner that that optimises storage while limiting structural wall heights in accordance with safety and topographical constraints.

The proposed development will therefore have no impact on the operations of the existing aerodromes or surrounding airspace. Below are figures from the site visit depicting the activities currently undertaken on site.

Table 2. Photos taken during the January 2026 site visit.

Figure 2: North view of the selected site

Figure 3: North-east view of the selected site

Figure 4: East view of the selected site

Figure 5: South-east view of the selected site

Figure 6: South view of the selected site

Figure 7: South-west view of the selected site

Figure 8: West view of the selected site

Figure 9: North-west view of the selected site

5. SCREENING TOOL COMPARISON AND CONCLUSION

The screening tool identifies the area as a **high sensitivity** towards the Civil Aviation Theme.

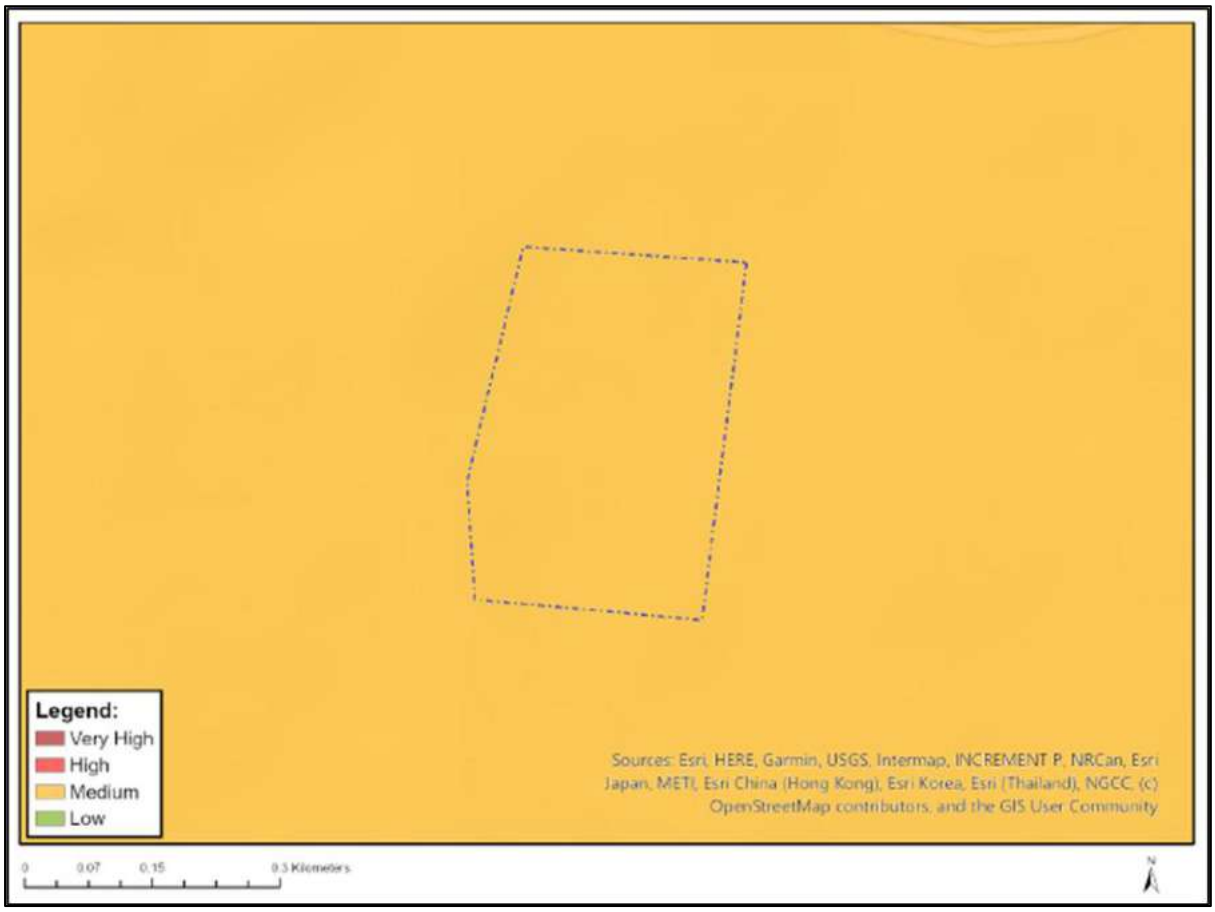

Figure 10: National Screening Tool – Civil Aviation Theme

Based on the findings of the assessment and available information it was determined that the site in its current state in fact has **low to negligible impact on Civil Aviation activities in the area**.

The site was assigned a medium rating for being located within 8 and 15 km of other civil aviation aerodrome. The Lichenry helistop is within the identified buffer zone, however, the development is not expected to have any impact on the operations of the existing aerodromes or surrounding airspace. The proposed infrastructure will be designed in a manner that that optimises storage while limiting structural wall heights in accordance with safety and topographical constraints. Therefore, due to topographical constraints, the maximum wall heights of the dams will be below five (5) meters.

Furthermore, the area navigation routes indicated that the routes for aircrafts are not in close proximity to the proposed site. The proposed development will therefore have no impact on the operations of the existing aerodromes or surrounding airspace.

Conclusion

It is the EAP's opinion that the proposed area is of a **low impact on Civil Aviation sensitivity** and that the expansion and modification will not significantly impact the Civil Aviation activities in the surrounding area.

ANNEXURE A

SPECIALIST CV

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environmental consulting services

KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University

KARIEN ZANTOW

PROFESSIONAL CAREER

2012 - Current

Zantow Environmental Consulting Services, MD

Karien is the founding member and has taken the position of Managing Director.

2006 -2012

ArcelorMittal South Africa Vanderbijlpark Works Environmental Manager

After one year Karien was promoted from Environmental Engineer to the Environmental Manager at ArcelorMittal Vanderbijlpark Works. The functions included the management of a 10 staff compliment department responsible for all environmental compliance and management functions.

She served on the Management Structure of Vanderbijlpark Works and was responsible to advise Top Management on strategic Environmental Management trends, changing legislation and ensuring legal compliance and highlight risks and provide solutions. She was responsible to drive the works to environmental compliance and ensure continued

improvement of the environmental footprint. This included the planning, prioritisation and funds management of the various environmental requirements. Under her management period remediation of various legacy issues commenced and was completed. This included the remediation of a waste disposal site and various contaminated land and dams, both organic and inorganic on a large scale. All functions related to waste, water and air quality management, from monitoring to licensing fell under her responsibility.

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Waste

- Waste Classification
- Integrated Waste Management Plans
- Waste Minimization Planning and implementation
- Waste Disposal Site Management and operational Plans
- Waste disposal site closure and remediation plans

Land Management

- Site Characterization

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- Remediation Plans
- License and authorization application

Air Quality

- Compilations and Verification of Emissions Inventory
- Emission Reduction Strategies
- NAEIS Reports, Annual Reports
- Compliance Inspections and Audits
- Postponement Applications and Amendments
- Monitoring In Accordance with New Emission Limits Standards Requirements

Water

- Water License Applications
- Integrated Waste and Water Management Plans (IWWMP)
- Storm Water Management Plans
- Water balances
- Borehole monitoring
- Surface water monitoring
- Data management and reporting

Appendix G-5

Archaeological and Heritage Compliance Statement

ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME STATEMENT IN SUPPORT OF THE APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION FOR THE DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND A HYDROPOWER-ASSISTED IRRIGATION SYSTEM AT

BINNEPLAAS BOERDERY

APPLICATION REF: GAUT 002/26-27/E0011

Report Number: 4369-ZANBB-2026

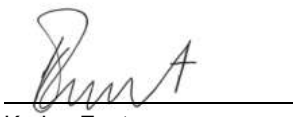
Report Date: 14th July 2026

General Information	
Report Name:	Archaeological And Cultural Heritage Theme Site Verification in Support of the Application for an Environmental Authorisation for the Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and a Hydropower-Assisted Irrigation System at Binneplaas Boerdery.
Site Visit Date:	15th January 2026
Report Date:	14th July 2026
Environmental Consultant	**Zantow Environmental Consulting Services CC** Colosseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911 PO Box 3858 Vanderbijlpark, 1911 **Contact Person:** Karien Zantow Tel: 083 384 3641 Fax: 016 932 4976 Email: karien@zantow.co.za
Client:	**Binneplaas Boerdery** Portion 9 of Erf 434 Uitclucht Farm Cooperville AH Vereeniging 1911 **Contact Person:** Frik Roets Cell: 082 977 1128 Email: frikroets@vodamail.co.za
Report Compiled by:	Karien Zantow
SACNASP Registration:	400114/14
EAPASA Registration:	2019/1871
Report Nr:	4369-ZANBB-2026

DECLARATION AND REVIEW

I, **Karien Zantow** as an independent consultant and specialist compiled this report and declare that it correctly reflects the results and findings made during the site visit and assessment. I further declare that;

- I act as an independent specialist in terms of the associated application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to the application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
  I have no, and will not engage in conflicting interests in the undertaking of the activity;
  I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority
  All the particulars furnished by me in this report are true and correct; and
  I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of Section 24F of the Act.



Karien Zantow
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871

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1. INTRODUCTION AND BACKGROUND

Binneplaas Boerdery is located on Portion 9 of Erf 434 Uitvlucht Farm in Cooperville AH, Gauteng. The property is within the jurisdiction of the Midvaal Local Municipality within the Sedibeng District Municipality, in the Gauteng province of South Africa. The property is zoned for agricultural land use and is currently being utilized as an agricultural holding. The Suikerbosrand River runs through the farm property, forming a natural watercourse within the site.

Binneplaas Boerdery proposes the construction of three aboveground balancing dams. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand River to their irrigation circles.

The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations.

The proposed construction of balancing dams for electricity generation triggers the following listed activities within the GN. R 983 Listing Notice 1 & Listing Notice 3:

Table 1. Activities triggered in GN. R 983.

Legislation, policy of guideline	Description of compliance
GN. R 983, 8 December 2014. Listing Notice 1, Activity 1	" the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
GN. R 983, 8 December 2014. Listing Notice 1, Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
GN. R 983, 8 December 2014. Listing Notice 1, Activity 27	"The clearance of an area of 1 hectares 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."
GN. R 985, 8 December 2014. Listing Notice 3, Activity 12	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. **Gauteng** i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.

Zantow Environmental Consulting Services CC (Zantow Environmental) has been appointed by Binneplaas Boerdery as an Independent Environmental Assessment Practitioner (EAP) to facilitate the application processes to obtain the required environmental authorisation.

As part of the application process, the National Web based Environmental Screening Tool (https://screening.environment.gov.za/screeningtool/) was used to generate a Screening Tool Report. The Screening Tool Report thus indicated that the proposed site for the proposed development has a low sensitivity for the Archaeological and Cultural Heritage theme. In addition, the report recommends the specialist studies that must be undertaken and submitted with the application.

The "*Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*" ("the Protocols"), clearly states that "prior to commencing with a specialist assessment, the current use of the land and environmental sensitivity of the site under consideration, identified by the screening tool, must be confirmed by undertaking a site sensitivity verification.

The said verification was undertaken by Zantow Environmental Consulting Services (Zantow Environmental), and it was confirmed that the site selected for the proposed waste management activities has low Archaeological and Heritage resources. Furthermore, the project itself would not impact on any of the resources identified.

Using existing information, desktop assessments and the site visit, this Compliance Statement was compiled in line with the requirements set out in the Protocol for the specialist assessment and minimum report content requirements for Environmental Impacts on Archaeological and Cultural Heritage.

2. DATA LIMITATIONS AND STUDY GAPS

Assumptions and conclusions made in terms of this compliance statement are based on the data and historic information provided to the specialist as part of application process.

Data and information obtained by means of the desktop assessment and associated specialist assessments (as provided) were deemed accurate and correct.

3. METHODOLOGY

To determine the potential of Archaeological and Cultural Heritage resources of the selected area for the proposed development, a site visit and desktop assessment was conducted.

The desktop study involved a review of the South African Heritage Resources Information System (SAHRIS), published literature, historical maps, and aerial imagery to identify any previously recorded archaeological or cultural heritage resources within or near the site. This was complemented by a site visit, during which the project footprint and its surroundings were systematically inspected for any visible heritage resources.

4. SITE VISIT

A site visit was undertaken in January 2026. Site photos taken during the site visit are included in this report. Based on the findings of the site visit it was found that the area selected for the proposed development has a low to negligible archaeological and cultural heritage resource potential.

The site is used for agricultural purposes and to date no archaeological or cultural heritage resources were identified from on-going activities. Furthermore, the proposed area is located away from any identified

archaeological and heritage sites. Therefore, it is not anticipated that the proposed development will have any impact on the archaeological and cultural heritage resources.

Figure 1: North view of the selected site

Figure 2: North-east view of the selected site

Figure 3: East view of the selected site

Figure 4: South-east view of the selected site

Figure 5: South view of the selected site

Figure 6: South-west view of the selected site

Figure 7: West view of the selected site

Figure 8: North-west view of the selected site

The National Screening Tool confirmed a low sensitivity, and a specialist compliance statement or study is therefore not legally required by the relevant Protocol or the National Heritage Resources Act. The EAP therefore concurs the National Screening Tool report sensitivity themes, through the following process

- conduct and document a preliminary site sensitivity verification;
- review the Screening Tool outcome, aerial imagery, existing land use and project layout;

- record site photographs and confirm whether the land use shown by the Screening Tool is accurate;
- include a motivation in the BAR explaining why the site appears to have low heritage sensitivity; and
- submit this information to the competent authority for consideration.

5. GEOLOGY

The Cooperville AH area, located near Vereeniging, is underlain by rocks of the Madzaringwe Formation, which forms part of the Ecca Group within the Karoo Supergroup. The geology of the area is dominated by siliciclastic sedimentary rocks, principally mudstone, siltstone and sandstone, with locally developed coal-bearing horizons. These rocks were deposited in ancient sedimentary environments during the Permian Period and are characteristic of much of the northern Karoo Basin.

Siliciclastic sedimentary rocks are composed predominantly of silicate mineral grains derived from the weathering and erosion of older rocks. Depending on their physical properties, these rocks may locally function as groundwater aquifers and, in some geological settings, can serve as reservoirs for hydrocarbons. They also provide valuable information on the geological history and palaeoenvironmental evolution of the region.

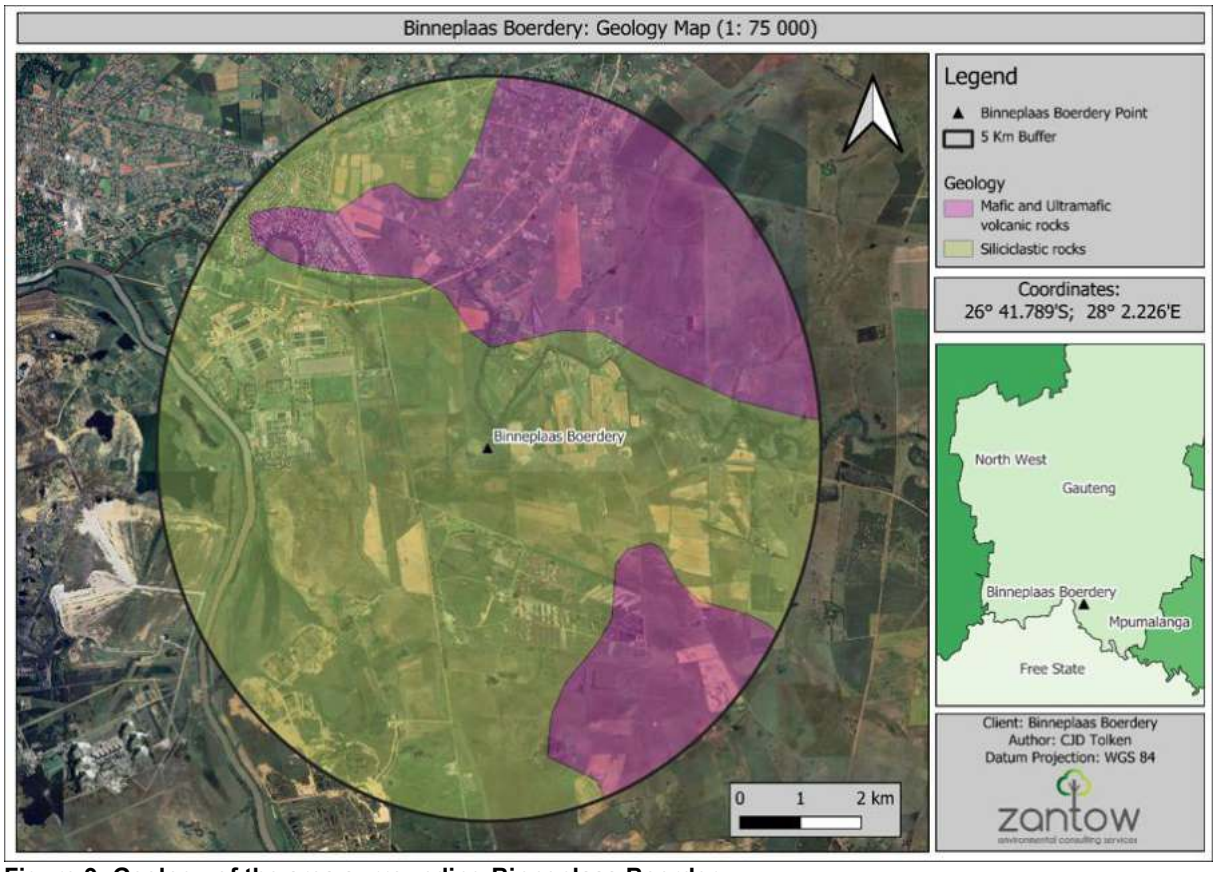

Figure 9: Geology of the area surrounding Binneplaas Boerdery

Siliciclastic rocks have archaeological significance because certain rock types, particularly chert and quartzite, possess fracture properties that make them suitable for the manufacture of stone tools. These materials can be knapped to produce sharp-edged implements such as flakes, blades and projectile points. Due to the durability of silica-rich minerals, stone tools manufactured from these materials are often well preserved in the archaeological record and provide important evidence of past human occupation and technological development.

While the geology itself is not an archaeological resource, it may have influenced the distribution of archaeological heritage by providing suitable raw materials for stone tool manufacture and by shaping the landscape occupied by past human populations. Silica-rich rocks such as quartzite, quartz and, where present, chert may have been exploited for the production of stone tools during the Earlier, Middle and Later Stone Age. Consequently, isolated stone artefacts or artefact scatters may occur within the broader landscape, particularly in association with watercourses, stable land surfaces and areas where suitable lithic raw materials were available. Historical archaeological features associated with early farming activities may also be present. However, no specific geological characteristics at the site suggest an elevated archaeological sensitivity beyond that generally expected for the Vaal region.

6. GRADE I HERITAGE: SHARPEVILLE MASSACRE MEMORIAL & GRAVE SITES

Sharpeville is one of South Africa's most historically significant places, renowned as the site of the Sharpeville Massacre on 21 March 1960. On that day, apartheid police opened fire on a peaceful crowd protesting the discriminatory pass laws, which required Black South Africans to carry passbooks restricting their movement. Sixty-nine people were killed and approximately 180 were injured. The massacre drew widespread international condemnation, exposing the brutality of the apartheid regime and becoming a defining moment in South Africa's struggle for freedom and human rights. In recognition of this legacy, 21 March is commemorated annually as Human Rights Day in South Africa.

The victims of the Sharpeville Massacre are buried in the Sharpeville Cemetery, where a memorial has been erected in their honour. The cemetery has become an important place of remembrance, commemorating those who lost their lives and serving as a symbol of the sacrifices made during the struggle against apartheid. It continues to be a focal point for annual commemorative events and reflection.

The Sharpeville Memorial Garden was established on the site of the former Sharpeville Police Station, where many of the victims fell. The memorial precinct preserves the location of the tragedy and provides a space for education, remembrance and reconciliation. The site's national significance was further reinforced on 10 December 1996, when President Nelson Mandela signed South Africa's final democratic Constitution at Sharpeville, symbolically linking the site of one of apartheid's darkest moments with the country's commitment to democracy, equality and human rights.

Today, Sharpeville is recognised as a site of exceptional national heritage significance and forms part of South Africa's proposed Human Rights, Liberation and Reconciliation: Nelson Mandela Legacy Sites serial nomination for inscription on the UNESCO World Heritage List, reflecting its enduring importance in the country's history and the global struggle for human rights.

Figure 10: Sharpeville Human Rights Precinct

Figure 11: Sharpeville Burial Site

Figure 12: Sharpeville Memorial Garden

Figure 13: Sharpeville Garden of Remembrance

The Sharpeville Memorial Garden and grave sites are found within the 15km and 18km radius of the Binneplaas site; therefore, the proposed development is not expected to have any impact on the heritage site.

7. GRADE II HERITAGE AND ARCHAEOLOGICAL SITES

Buildings or neighbourhoods of notable architectural or aesthetic value are classified as Grade II heritage sites, although their significance is local or regional rather than national. These locations are regarded as local landmarks that add to the uniqueness of a region and are safeguarded by provincial or local authorities.

There are no Grade II heritage sites that are in close proximity to the Binneplaas Boedery site, however, the following Grade II Sites were identified within a 35km radius of the site:

- **Kwa-Dlomo Dam:** Is officially recognized as a provincial heritage site due to its historical and cultural ties to the tragic Sharpeville Massacre of March 21, 1960. Today, the dam is not only a memorial site for political liberation, but it also serves as a local environmental hub recognized for its bird-watching opportunities and diverse ecosystem.
- **Our Lady of Fatima Roman Catholic Church:** Located opposite the Sharpeville Memorial, the church holds historical and spiritual significance within the Sharpeville community. During the apartheid era, it served as a place of worship, solace and community support. Its association with the message of Our Lady of Fatima - centred on peace, prayer and perseverance in times of suffering - gave the church particular symbolic importance for a community affected by political oppression and violence.
- **Duncanville Archaeological Site:** The Duncanville Archaeological Reserve (also known as the Van Riet Lowe Archaeological Reserve) is an internationally significant Earlier Stone Age site situated in Vereeniging. Excavations of the Vaal River gravels have produced a rich assemblage of Acheulean stone tools, including handaxes and cleavers dating to approximately 500,000 to one million years ago, providing important evidence of early human occupation in southern Africa.
- **Klip River Quarry:** The Klip River Quarry is a geo-archaeological site of international significance located near Vereeniging. First investigated in the early twentieth century, it contains extensive Acheulean artefact assemblages and has contributed substantially to the understanding of the Earlier Stone Age in southern Africa. The site is particularly noted for its well-preserved handaxe industry recovered from ancient river gravels.
- **Redan Rock Engraving Site:** The Redan Rock Engraving Site contains numerous petroglyphs created by prehistoric hunter-gatherer communities. These engravings provide valuable insight into the symbolic expression, cultural practices and spiritual beliefs of the region's indigenous inhabitants and constitute an important component of South Africa's rock art heritage.

- **Sharpeville Community Hall:** The Sharpeville Community Hall is a historically significant landmark within the Sharpeville Human Rights Precinct and has been declared a Provincial Heritage Site. It has long served as a focal point for community gatherings, public meetings and Human Rights Day commemorations. During the apartheid era, the hall provided an important venue for civic engagement, political organisation and the preservation of the community's collective memory, and it remains central to the interpretation of Sharpeville's liberation history.
- **Anglo-Boer War Blockhouses (Witkop):** Significant relic from the Second Anglo-Boer War (1899–1902). The blockhouses were instrumental in the British strategy of dividing the Boer forces and preventing their mobility across the open veld. By using blockhouses, barbed wire fences, and "scorched earth" policies, the British sought to cut off supplies and weaken the Boer resistance. The Witkop Blockhouse is a surviving example of this strategy, symbolizing the military ingenuity and harsh tactics employed during the war.

Figure 14. Kwa-Dlomo Dam

Figure 15. Our Lady of Fatima Roman Catholic Church

Figure 16. Rock engravings at the Redan site

Figure 17: Sharpeville Community Hall

Figure 18: Anglo-Boer War Blockhouses (Witkop)

8. SCREENING TOOL COMPARISON AND CONCLUSION

According to the National Screening Tool, the site selected for the proposed development has a **low sensitivity** for the Archaeological and Cultural Heritage Theme.

The area is given a low sensitivity due to the location Grade I and Grade II Heritage sites located beyond the 5km radius of the site.

Figure 19: National Screening Tool – Archaeological and Cultural Heritage Theme

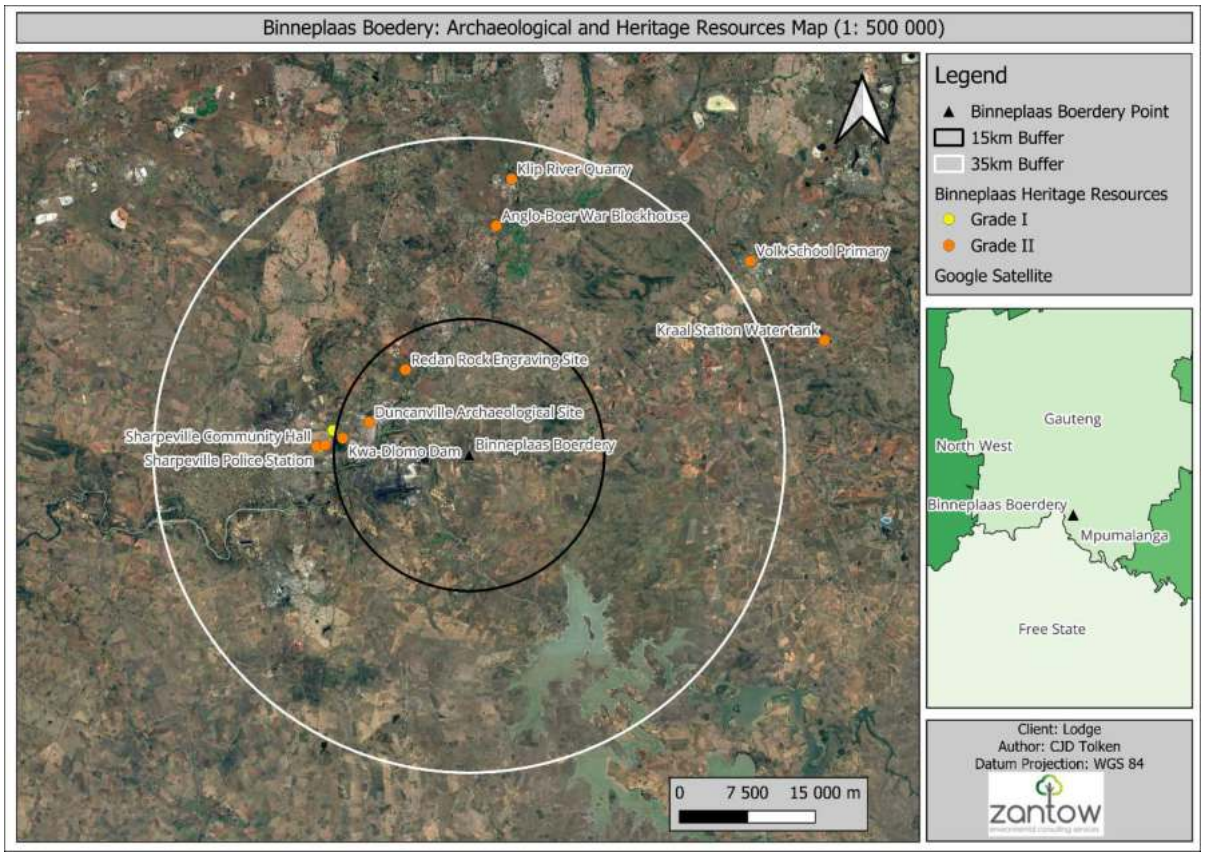

Figure 20: Heritage Site Location Map

Based on the findings of the assessment and the available information, it is concluded that the proposed development is unlikely to result in any significant adverse impacts on archaeological or cultural heritage resources. The study area, in its current condition, exhibits a low archaeological and cultural heritage sensitivity, and no heritage resources of high significance were identified within the proposed development footprint.

The proposed development will be situated within an existing area zoned for agricultural use. The nearest Grade I heritage resource is located approximately 15 km from the site, while the nearest Grade II heritage resources are situated well beyond the 10 km study area. Consequently, no direct or indirect impacts on these formally protected heritage resources are anticipated.

Site Name	Grading	Approx. Distance from Site	Direction from Site
Sharpeville Massacre Victims Grave Sites	Grade I	**15.1 km**	West (W)
Sharpeville Memorial Garden	Grade I	**17.0 km**	West (W)
Sharpeville Police Station	Grade I	**16.9 km**	West (W)
Duncanville Archaeological Site	Grade II	**12.4 km**	West-northwest (WNW)
Redan Rock Engraving Site	Grade II	**10.2 km**	Northwest (NW)
Anglo-Boer War Blockhouse	Grade II	**25.5 km**	North-northeast (NNE)
Klip River Quarry	Grade II	**31.3 km**	North-northeast (NNE)
Sharpeville Community Hall	Grade II	**17.2 km**	West (W)
KwaDlomo Dam	Grade II	**14.0 km**	West (W)
Our Lady of Fatima Roman Catholic Church	Grade II	**16.2 km**	West (W)

It is therefore the specialist's opinion that the proposed development site is of low archaeological and cultural heritage sensitivity. Provided that the recommendations contained in this report are implemented, the proposed development may proceed from an archaeological and cultural heritage perspective, as it is not expected to adversely affect any Grade I or Grade II heritage resources or other significant archaeological or cultural heritage features.

Conclusion

A review of heritage resources within the broader study area indicates that several heritage sites occur within the wider Vereeniging and Sharpeville region. The closest formally protected heritage resource is the Redan Rock Engraving Site (Grade II), located approximately 10 km northwest of the proposed development site. Other nearby Grade II resources, including the Duncanville Archaeological Site, KwaDlomo Dam, Our Lady of Fatima Roman Catholic Church, and the Sharpeville Community Hall, are situated approximately 12-17 km from the site. The nearest Grade I heritage resources—the Sharpeville Massacre Victims Grave Sites, Sharpeville Memorial Garden, and the Sharpeville Police Station—are located approximately 15-17 km west of the proposed development area. These heritage resources are well beyond the proposed development footprint and are separated from the site by existing infrastructure and developed landscapes.

It is the specialist's opinion that the proposed development site is of **low archaeological and cultural heritage sensitivity**. No archaeological sites, historical structures, burial grounds, graves or other heritage resources of significance were identified within the proposed development footprint during the assessment. Accordingly, there is no heritage-related reason why the proposed development should not proceed.

As with any ground-disturbing activities, however, the possibility of uncovering previously unknown archaeological material or human remains cannot be entirely excluded. Should any archaeological artefacts, structures, burial grounds, graves or other heritage resources be encountered during construction, all work in the immediate vicinity must cease immediately, and a suitably qualified heritage specialist together with the relevant heritage authority must be notified in accordance with the provisions of the **National Heritage Resources Act (Act 25 of 1999)**.

Based on the findings of this assessment, the proposed development is considered acceptable from an archaeological and cultural heritage perspective. No further archaeological investigations are considered necessary prior to construction, provided that the recommendations contained in this report are implemented.

Recommendations

- Restrict all construction and associated activities to the approved development footprint to minimise unnecessary disturbance of surrounding areas.
- Should any previously unidentified archaeological material, historical features, graves or human remains be uncovered during construction, a **Chance Finds Procedure** must be implemented. Work in the affected area must cease immediately until the find has been assessed by a qualified heritage specialist and the relevant heritage authority has provided written authorisation for work to resume.

Annexure A

EAP CV

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environmental consulting services

KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University

Appendix H

Environmental Management Programme

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

BINNEPLAAS BOERDERY

GAUTENG PROVINCE

Report Nr: 4300-ZANBB-2026

Report date: 29 May 2026

GENERAL INFORMATION	
Report Name:	**THE APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION FOR THE DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND A HYDROPOWER-ASSISTED IRRIGATION SYSTEM AT BINNEPLAAS BOERDERY, MID-VAAL, GAUTENG PROVINCE.**
Report Date:	29th May 2026
Environmental Consultant	**Zantow Environmental Consulting Services CC** Colosseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911 **Contact Person:** Karien Zantow Tel: 083 384 3641 Email: karien@zantow.co.za
Client:	**Binneplaas Boerdery** Portion 9 of Erf 434 Uitclucht Farm Cooperville AH Vereeniging 1911 **Contact Person:** Frik Roets Cell: 082 977 1128 Email: frikroets@vodamail.co.za
Report Compiled by:	Mbali Zwane
Report Reviewed by:	Karien Zantow
Report Nr:	4300-ZANBB-2026

TERMS AND DEFINITIONS

CA	Competent Authority
DEFF	Department of Environment, Forestry and Fisheries
EA	Environmental Authorisation
ECO	Environmental Control Officer
EMPr	Environmental Management Program
GDENv	Gauteng Department of Environment
GN	Government Notice
I&AP	Interested and Affected Parties
NEMA	South African National Environmental Management Act
NWA	National Water Act
PPE	Personal Protective Equipment

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1. INTRODUCTION AND BACKGROUND

Binneplaas Boerdery is located on Portion 9 of Erf 434 Uitvlucht Farm in Cooperville AH, Gatueng. The property is within the jurisdiction of the Midvaal Local Municipality and Gauteng Department of Environment (GDENv) Provincial municipality. The property is zoned for agricultural land use and is currently being utilized as an agricultural holding. The Suikerbosrand River runs through the farm property, forming a natural watercourse within the site.

Binneplaas Boerdery proposes the construction of three aboveground balancing dams (Figure 1). The proposed project entails the development of an integrated water abstraction, storage, energy recovery, and irrigation system on agricultural land located adjacent to the Suikerbosrand River. The system combines river abstraction, cascading off-channel balancing dams, gravity-driven flow, and hydropower-assisted pumping to enhance irrigation efficiency and long-term water security. The primary objective of the project is to enhance on-farm water security and irrigation efficiency through the construction of three cascading earth dams positioned along a natural slope on the property.

Water will be abstracted from the Suikerbosrand River and pumped to the uppermost dam via a primary abstraction pump system. From this highest elevation storage point, water will be released in a controlled manner to flow sequentially through the second and third (lower) dams. The cascading configuration is designed to utilize gravitational flow and hydraulic head between the dams.

As water flows from the upper dam to the lower dams, the system will incorporate in-line hydropower-assisted pumping technology (e.g., hydraulic ram pumps or micro-hydro driven pumps). These pumps are designed to harness the kinetic and potential energy generated by the moving water to produce mechanical and/or electrical energy. This recovered energy will be used to partially or fully power the pump systems, thereby reducing reliance on external electricity or fuel-driven pumping.

One of the hydropower-assisted pumps will be configured to abstract stored water from the cascading dam system and convey it via pipeline infrastructure to newly developed irrigation fields on the farm. The irrigation component will support expanded crop production and improved agricultural yield, while optimizing water reuse within the closed storage network.

Key infrastructure components of the project will include:

- River abstraction works and intake structure
- Rising main pipeline to the upper dam
- Three engineered cascading dams with spillways and control structures
- Gravity transfer channels/pipelines between dams
- Hydropower-assisted pump units (self-powered from water flow)

- Irrigation pump station and distribution pipelines
- Energy control and water flow regulation mechanisms.

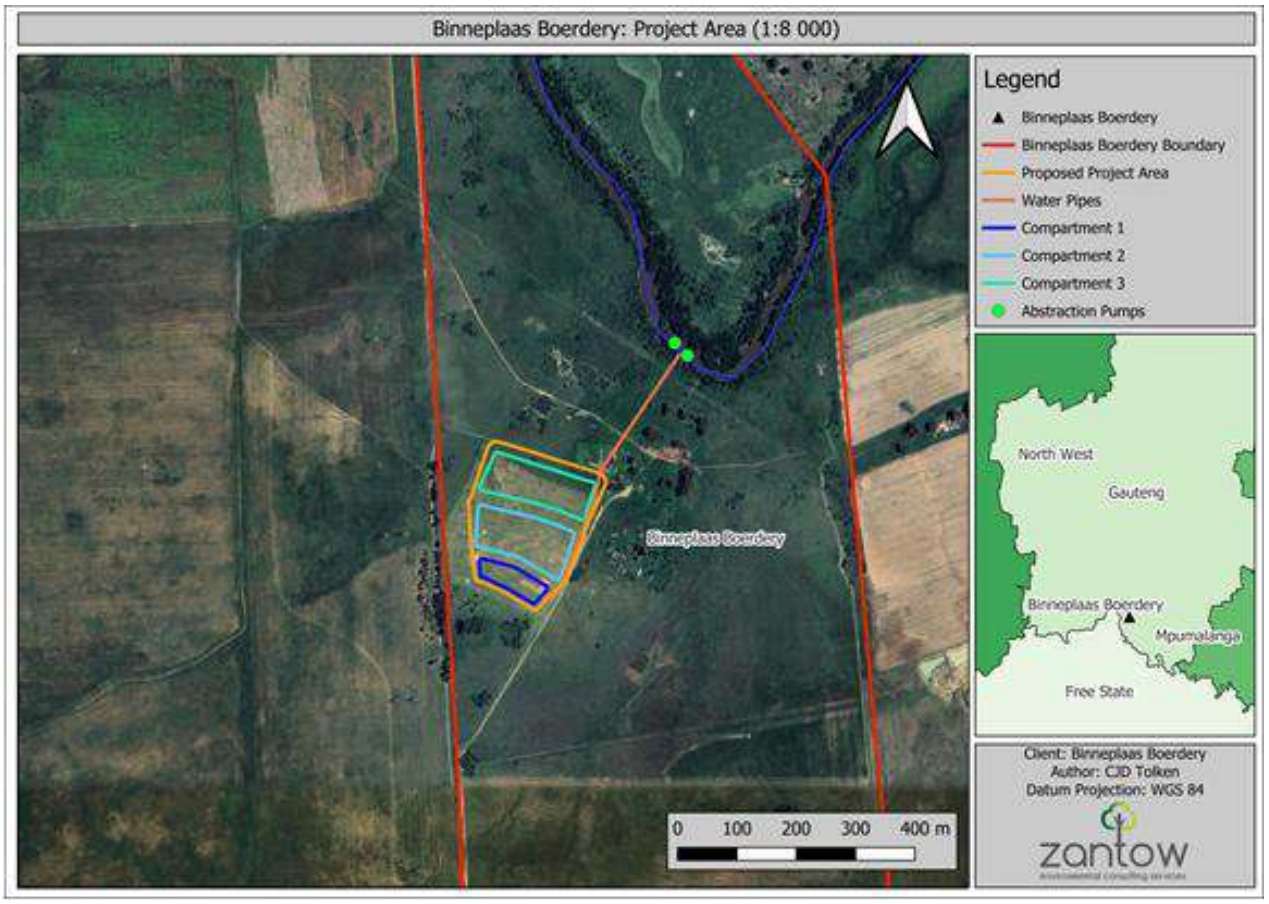

Figure 1: Proposed Site Layout

2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Zantow Environmental Consulting Services (Zantow Environmental) was appointed by Binneplaas Boerdery as an independent EAP to facilitate an EA application process. The EAP's details are summarised below:

Independent consultant	Zantow Environment Consulting Services cc
Contact person	Karien Zantow
Cell	083 384 3641
E-mail	karien@zantow.co.za
Postal address	PO Box 3858 Vanderbijlpark,1900
Physical address	Corner of Delius and Chopin Streets Coliseum Building 1st Floor, Unit 2 Vanderbijlpark, 1910

This document was prepared by Mbali Zwane, an environmental consultant and reviewed by Karien Zantow from Zantow Environmental, with the following credentials:

Karien Zantow

Karien Zantow obtained her degree from the University of Pretoria in BSc (Agric) Animal Science. The main subjects were Physiology, Nutrition, Ecology, Biochemistry, Toxicology, Plant production, Soil Science and Pasture Science. This degree provided her with a sound base and understanding of the environment.

Karien extended her knowledge in the environmental sciences by completing the BSc (Hons) Environmental Technology at the University of Pretoria. The honours degree presented by the Chemical engineering department addressed Environmental management that included South African environmental legislation, ISO 14001, Environmental impact assessments, Life cycle assessment, auditing and public participation. As well as the three specialized fields of study: Water (wastewater treatment and design), air (abatement equipment) and solid/hazardous waste management. She also completed a Post Graduate diploma in Environmental Sciences at the University of Witwatersrand which focussed on Environmental Law, Environmental Chemistry, Air quality and Energy, Waste and Wastewater management and Environmental Impact Assessments.

Karien Zantow has more than 15 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment.

- Teaching Business, subcontracted to Barlow World (1 year)

- Sappi Kraft Ngodwana (2 years) – As environmental engineer
- ArcelorMittal South Africa Vanderbijlpark Works (7 years)
- Zantow Environmental Consulting Services (August 2012 – current)

During her career she has been involved with many large-scale site characterisation and remediation projects from the conceptual phase to implementation. Other projects include a variety of Waste Management Licences, Atmospheric Emissions Licences, other EIA's and Environmental Audits. Moreover, emission sampling and reporting forms a core component of Karien's scope of work.

Karien is also a registered Natural Science Professional with the South African Council for Natural Scientific Professions (Reg Nr 400114/14).

3. DESCRIPTION OF OPERATIONS

3.1. Location

Binneplaas Boerdery is located on Portion 9 of Erf 434 Uitvlucht Farm in Cooperville AH, Gauteng. The property is within the jurisdiction of the Midvaal Local Municipality within the Sedibeng District Municipality, in the Gauteng province of South Africa. The property is zoned for agricultural land use and is currently being utilized as an agricultural holding. The Suikerbosrand River runs through the farm property, forming a natural watercourse within the site.

3.2. Property Description:

The site is located on:

- Portion 9 of Erf 434, Uitvlugt Farm in Cooperville AH, Gauteng Province.

The table below gives the coordinates of the site.

Table 1: Coordinates of the site for the proposed facility:

Coordinate	Degrees	Minutes	Seconds
Latitude (S)	26°	41′	47.52″
Longitude (E)	28°	2′	15.00″

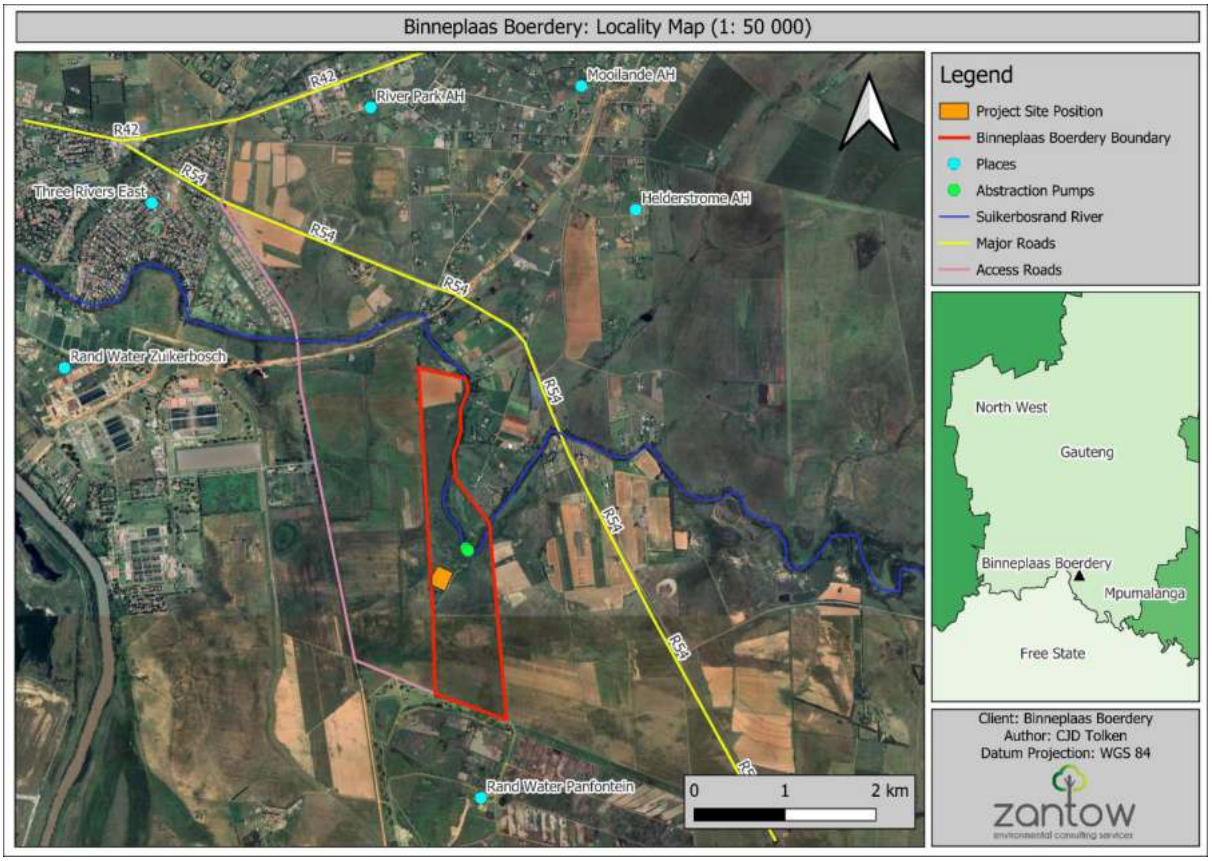

Figure 2: Property Location

3.3. Process Description

Water Abstraction and Conveyance

Water will be abstracted from the Suikerbosrand River via an existing river intake structure and pumped through a rising main pipeline to the uppermost balancing dam. The abstraction and transfer

infrastructure will be designed to comply with applicable water use authorisations and operational control requirements.

Cascading Dam Storage System

The storage component of the project will consist of three engineered off-channel balancing dams constructed in a cascading configuration along the natural slope of the property. The dams will be interconnected to allow controlled gravity flow from the highest elevation storage point to the lowest.

The balancing dam system will comprise three compartments designed to optimise storage while limiting structural wall heights in accordance with safety and topographical constraints.

Combined system capacity and footprint:

- Total gross storage capacity: ±107 976 m³
- Combined water surface area: ±27 618 m²
- Total footprint area: ±3.2 ha

The dams will be located outside the 1:100-year floodline and ecological buffer zones to minimise environmental risk.

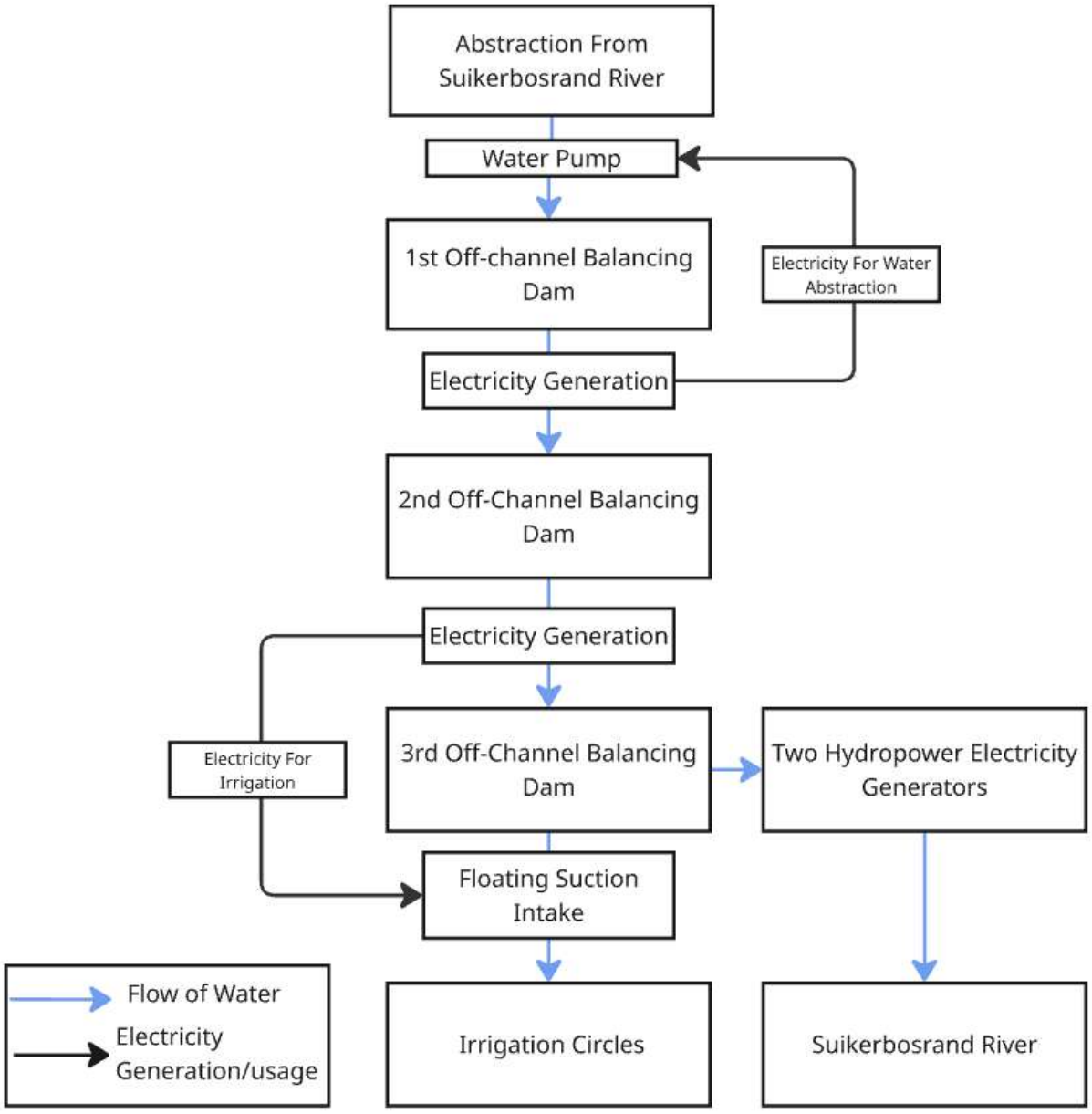

Figure 3: Binneplaas Boerdery Process Flow

Dam Engineering Design Features

Dam Type and Construction

Each dam will be constructed as a lined, homogeneous earth fill embankment structure using suitable site-won materials, subject to geotechnical suitability testing.

Key construction elements include:

- Cleared and grubbed dam footprints
- Excavated basins shaped to design profiles

- Engineered embankments with controlled compaction
- Key trench foundations beneath embankment walls
- Crest widths of approximately 4 m
- Embankment slopes of 1(V):2.5(H) upstream and downstream

Embankment fill will be compacted to a minimum of 95% Standard Proctor density at specified moisture conditions.

Lining System

To prevent seepage losses and improve storage efficiency, all dams will be fitted with a **1.5 mm HDPE geomembrane liner system** installed on prepared internal slopes and basin floors. The liner will be anchored into crest trenches and installed in accordance with recognised geomembrane standards and supplier specifications.

Spillway and Hydraulic Control Infrastructure

Each dam compartment will include engineered emergency spillway structures constructed as HDPE-lined chutes with gabion sidewall protection to safely convey overtopping flows. Interlinking spillways between compartments will regulate cascade flow and prevent overtopping or embankment failure during extreme inflow or operational malfunction scenarios.

Energy Recovery and Self-Powered Pumping

The cascading configuration creates hydraulic head and flow velocity as water moves from the upper to lower dams. This hydraulic energy will be harnessed through the installation of hydropower-assisted pumping technology, such as:

- Hydraulic ram pumps, and/or
- Inline micro-hydro turbine pumps

These systems generate mechanical and/or electrical power from flowing water, enabling partial or full self-powering of pump operations without reliance on grid electricity.

Recovered energy will be used to:

- Support abstraction pumping efficiency
- Power internal transfer pumps where required
- Reduce operational energy costs

Irrigation Abstraction and Distribution

Water required for agricultural irrigation will be abstracted primarily from the lowest dam (Compartment 3) via:

- A 315 mm HDPE outlet pipeline
- Floating suction intake mounted on a pontoon structure

The floating intake ensures abstraction from optimal water levels while avoiding sediment entrainment. Water will then be pumped through a dedicated irrigation pipeline network to supply newly developed crop irrigation areas on the farm.

Geotechnical and Foundation Considerations

A site geotechnical investigation comprising trial pits and laboratory testing confirmed the presence of suitable clayey sand and weathered sandstone materials for embankment construction. No shallow groundwater table was encountered, and no subsoil drainage system was deemed necessary at design stage.

4. OBJECTIVE OF THE EMPR

The overall objective of the EMPr is to provide Binneplaas Boerdery with practical guidance for the environmentally and socially responsible management of the proposed activities. This document provides appropriate mitigation measures designed to minimise or eliminate significant adverse environmental impacts that may result from project.

The specific objectives of this EMPr are to:

- Describe actions for implementing and maintaining mitigation measures to address the potential impacts identified in the BA process;
- Define organisational and administrative arrangements for environmental management and monitoring of the waste management activities at the facility;
- Ensure that site supervisory staff understand the recommended pro-active environmental management measures, so that potential problems can be identified, and mitigation measures adopted; and
- Define actions for environmental control, in the event of unexpected pollution.

4.1. Identified environmental aspects covered by the EMPr are as follows:

Indoor and Outdoor Air Quality

Mitigation and monitoring measures with the objective to achieve adequate control of emission generation associated with on-site activities in order to have acceptable impact on humans and the environment.

Waste management

Implementation of effective waste management practices to prevent environmental pollution and unnecessary disposal of waste streams. Effective and traceable records and documentation in order to assure waste generators whose waste are being handled, that waste is safely and responsibly recycled, recovered and or treated.

Surface water and soil pollution

Mitigation measures to prevent surface water and ground water contamination as a result of handling hazardous chemical and waste materials.

Resource use

Adequate management measures to minimise the use and promote the sustainable use of natural resources.

Socioeconomics

Measures to reduce the negative and enhance the positive socio-economic impacts during the construction, operation and decommissioning phases of the project.

4.2. Phases of the EMPr

4.2.1. The Planning Phase

This EMPr offers an ideal opportunity to incorporate pro-active environmental management measures with the goal of attaining sustainable development. While there is still the chance of accidental impacts taking place; however, through the incorporation of contingency plans (e.g. this EMPr) during the planning phase, the necessary corrective action can be taken to further limit potential impacts.

4.2.2. The Construction Phase

The bulk of the impacts during this phase will have immediate effects (e.g. noise, dust and water pollution). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase, together with a commitment to sound environmental management from Binneplaas Boerdery.

4.2.3. The Operational Phase

By taking pro-active measures during the planning and construction phases, potential environmental impacts emanating during the operational phase will be minimised. This, in turn, will minimise the risk and reduce the monitoring effort, but it does not make monitoring obsolete.

4.2.4. The Decommissioning Phase

A generic approach has been included in the EMPr for when Binneplaas Boerdery intends to decommission the facilities. Binneplaas Boerdery would however have to undergo an environmental authorisation process when decommissioning is planned.

4.3. Obligations and responsibilities

The obligations and responsibilities of Binneplaas Boerdery, its contractors and its agents are described in this section.

Binneplaas Boerdery has the overall responsibility to ensure that the activities undertaken at the facility are in accordance with the recommendations of the EMPr as and when necessary, during the life cycle of the facility. It is the responsibility of Binneplaas Boerdery to ensure that all contractors and agents adhere to the stipulations of the EMPr.

Binneplaas Boerdery undertakes to manage all operations in such a manner as to prevent or minimise adverse effects on the environment, reduce the risk of natural resource contamination and limit impacts on the surrounding community. In addition, Binneplaas Boerdery must strive to maximise socio-

economic benefits for the area and protect the health and safety of employees, contractors, visitors and the general public. To this end, Binneplaas Boerdery must:

- Ensure that the EMPr forms an integral part of the contract documents entered into with all contractors.
- Educate personnel, contractors and visitors with regards to general environmental, health and safety requirements applicable to the operations undertaken by Binneplaas Boerdery and the content of the EMPr.
- Provide professional staff to give effect to its environmental management commitments.
- Appoint/designate a competent Environmental Control Officer (ECO) to oversee the implementation of the EMPr.
- The ECO will perform regular inspections to monitor compliance with the EMPr and provide results to the appropriate level of management within Binneplaas Boerdery.
- The ECO will provide guidance on the remediation of any unplanned environmental impacts.
- The ECO will also motivate and facilitate any amendments to the EMPr as and when they become necessary.
- Monitor, evaluate and report performance in terms of safety, health and environmental strategies to the relevant management level within Binneplaas Boerdery.
- Make employees related to the facility aware of the environmental risks pertaining to the activities associated with the operations of Binneplaas Boerdery and inform them of the mitigation measures contained in the EMPr that are applicable to their scope of work.

4.4. Responsibilities

- **Operations Manager**

The Operations Manager will have the main responsibility to ensure that all contractors appointed throughout each phase of operation (construction, operation and closure) comply with the environmental management measures in this document.

In addition, the Operations Manager shall:

- Assume overall responsibility for the effective implementation and administration of the EMPr and the conditions and requirements of the EA;
- Ensure that the EMPr and the EA conditions are included in all contractor's contracts;
- Ensure that the applicable supervisor and contractors are provided with a copy of the EA and the latest approved version of the EMPr.

Furthermore, the duties of the operations manager include:

- Ensuring that the materials are being correctly delivered to the site and deposited at the correct storage point efficiently and safely.

- Ensuring that the site is kept clean and that cleaning schedules are adhered to.
- Ensuring that all plant and machinery are correctly operated and maintained in accordance with the manufacturer's specifications.
- Preventing any vehicle maintenance from being carried out on site, except in the designated workshop areas.
- Maintaining accurate records of all site activities, including the amounts and types of waste collected on a daily/weekly basis as well as accounts of any accident or injury occurring during operations.
- Report any significant environmental incident to the relevant department as required by the license conditions.
- The Operations Manager will report the above back to the senior management on a regular basis, which will be used as part of the site management scheme.

- **Operations Supervisor**

The operations supervisor must report to the operations manager and will be responsible for the following aspects:

- Ensure compliance with the environmental requirements set in the EMPr;
- Brief the operational and maintenance staff about the requirements of the EMP;
- Advise the Management about the interpretation, implementation and enforcement of the EMPr;
- Conduct internal meetings;
- Undertake periodic audits of adherence to the EMPr;
- Report any significant environmental incidents to the Operations Manager;
- Respond to any complaints from the public.

- **Environmental Control Officer ("ECO")**

The ECO may be an appointee of Binneplaas Boerdery or an external party. The appointed ECO will be responsible for the implementation of the EMPr and ensuring compliance with the EA. In addition to this the ECO shall:

- Conduct regular site inspections, in conjunction with the Operations Supervisor to ensure that the operations undertaken by appointed contactors and Binneplaas Boerdery employees are compliant with the EMPr and EA.
- Keep a register of all incidents (spills, complaints, injuries, legal transgressions etc.);
- Report any problems or complaints, which could not be resolved in collaboration with the Operations Supervisor to top Management;
- Ensure that monitoring takes places in accordance with the management measures outlined in the EMPr and the associated authorisations;

- Implement the recommendations made as a result of the annual independent environmental audits; and
- Ensure that all personnel are trained in accordance with the requirements outlined in the EMPr as well as the EA.

- **Cleaners**

The cleaners will be responsible for cleaning the facility on a pre-planned schedule. They will be required to remove all dust from all accessible surfaces and return spilled materials to the appropriate stockpile.

The cleaners will be trained to recognise the different materials anticipated on the site; and in the correct way of using cleaning agents, where applicable.

5. ENVIRONMENTAL MANAGEMENT PROGRAMME

The proposed project will follow a life cycle consisting of three phases, namely, construction, operation, and eventual closure. The different activities associated with the project, identified during the Impact Assessment, as well as the corresponding proposed mitigation measures are discussed in the following section.

Table 2: Objectives of Environmental Measures

Activity	Objective
Construction Activities	• Ensure that all necessary legal obligations and contractual conditions have been met prior to the construction commencement; and • Ensure that all role players and stakeholders are aware of the pending construction activities and have received timeous notice.
Water Management	• Effectively control storm water runoff to ensure no adverse impact on the surface or groundwater resources. • Ensure all hazardous waste activities occur on lined surfaces to avoid risk of groundwater contamination. • Operate the site according to the EA and EMPr
Hazardous Substance Spills	• To ensure that hydrocarbon and/or chemical spills from the site operations and/or equipment occurring during all phases are suitably managed to reduce potential impacts on the environment.
Handling of waste	• To ensure that all sub-contractors responsible for delivering materials to site operate in an environmentally friendly manner whilst on site; and • To ensure that the activities related to material deliveries do not create any unnecessary impacts on the environment.
Waste Management	• To keep the construction site neat and clean; • Disposal of rubble and refuse in an appropriate manner; • Minimise neighbour complaints.
Fire Prevention	• Acceptable fire prevention measures as well as adequate fire response plans.
Designated Storage Areas	• To ensure that dangerous goods, hazardous materials

Activity	Objective
	and waste are properly stored so as to avoid accidents, spillage, and impacts to the environment.
Interaction with Landowners	• No damage to private property; and • Maintain good relations with neighbouring landowners.
Noise / Working Hours	• To ensure that noise is managed in such a way so that no legitimate complaints are received.
Safety	• Ensure the safety of personnel on site by ensuring adequate safety training and the use of Personal Protective Equipment (“PPE”) at all times; and • Ensure that any construction areas or open trenches are clearly demarcated to avoid injury.

5.1. Environmental Management Programme for the Construction / Expansion phase

Table 3: EMPr for the Construction Phase

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
1.	**PLANNING**						
Activities: Planning							
1.1	Improper planning leads to additional impacts that could have been avoided	Project Plan	Streamlined project execution	There must be sufficient facilities (plant materials) and resources (trained labour force) to ensure that the planned activities conform to both the EA conditions. For example, there should be sufficient trained and certificated staff to undertake the construction activities work, where applicable. The construction activities must be completed in accordance with civil engineer drawings and under supervision of a registered engineer.	None	Operations Manager	Continuous
2.	**SAFETY**						
Activities: Health and Safety							
2.1	Occupational exposure impacting on personal health and or wellbeing.		Safe working conditions	The construction activities, including installation of electricity infrastructure are to be performed by adequately trained personnel and all equipment operated by appropriately trained personnel.		SHEQ Manager	Ongoing

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
2.2	Potential injuries	Prevention of personal injuries or health impacts on personnel		Construction areas must be clearly demarcated at all times.	Verify credentials before construction commences and keep copies of certification/training for record keeping.		
2.3				All site personnel (incl. contractors) must have adequate PPE and safety gear appropriate to the task being undertaken (e.g. hard hats, safety boots, reflective vests, masks etc.).	Conduct regular inspections and maintain a PPE register for the issuance of PPE.		
2.4				All personnel working on the project must undergo induction and be informed of potential risks associated with the activities.	Keep records of induction		
2.5				All personnel working on the project must operate in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA).	Conduct regular occupational health and safety audits and inspections during construction.		
3.	**Soil and Land Disturbance**						
Activities: Site preparation and excavation							
3.1	Clearance of vegetation.	Prevent land degradation	None	Clearly demarcate the construction footprint and limit clearing of vegetation to the footprint.	Conduct regular inspections	ECO / Site Manager	On-going
3.2	Soil compaction and land			Clearly demarcate routes for vehicles and equipment and rehabilitate once construction phase is completed.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
3.3	degradation			Control the establishment of invasive species.			
3.3				Ensure that the bulk earthworks are sorted and stored in designated areas for reuse during construction (where applicable) and for site restoration			
3.4				Install erosion control measures and monitor the entire site for signs of erosion throughout the construction phase of the project			
3.5				Stabilize exposed surfaces quickly			
3.6	Excavations- Chance find of fossils	Preserve paleontologically significance material	Non	Follow chance find procedure as indicated on the PIA compliance statement	Conduct regular inspections	ECO / Site Manager	On-going
	WASTE						
Activities: Generation and management of waste							
4.1	Windblown litter – nuisance conditions	Eliminate or minimise pollution and	Prevent wind-blown litter	All personnel, including external contractors must undergo a Safety Health and Environmental (SHE) training prior to the undertaking of work.	Training Records	SHEQ Manager and ECO	Upon commencement

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
4.2	Environmental pollution Incorrect handling, storage and disposal of waste leading to environmental pollution	nuisance conditions Correct waste management	Effective waste management practices Mixing of waste prevention Appropriate waste handling and safe disposal	The SHE induction training must address the use and management of sanitation facilities (chemical portable toilets), general site management, housekeeping, waste management protocols and any other requirements set in the EMP.			
4.3				An appropriate number of skips must be provided to store waste. All solid waste, rubble, scrap or building waste must be collected in separate, demarcated skips or bins that must be covered to prevent the generation of windblown litter.	Conduct regular inspections during construction	Site Manager and ECO	Daily
4.4				If a specific waste stream cannot be accommodated in a designated skip or bin, existing containment facilities may be used temporarily until the material can be removed for reuse, recycling, or safe disposal, as appropriate.		Site Manager and ECO	Daily
4.4				The burning of waste must be prohibited on site.			
4.5				Material used to clean up spills must be regarded as hazardous and appropriately be disposed.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
4.6				Ensure that waste is managed by duly authorised transporters and waste management facilities. Waste disposal certificates must be obtained for all hazardous waste disposed, and records must be kept on all waste leaving the premises.	Waste Manifest Documents / Safe Disposal Certificates	Site Manager/ Operations Manager and ECO	Throughout construction
5.	**NOISE**						
Activities: Construction activities							
5.1	Noise Pollution Occupational exposure	Non-exceedance of prescribed noise levels	Occupational exposure limits	Construction activities must be limited to operational hours between from 6AM to 6PM to minimise noise disturbance.	None	ECO Operations Manager, Operations Supervisor	Throughout construction
5.2				Equipment and machinery must be maintained as to limit excessive noise generation during construction phase.	Vehicle Inspections	Operations Manager, Operations Supervisor	Throughout construction
5.3				Employees or contractors working in high noise areas must be equipped with the appropriate PPE and hearing protection.	Exposure monitoring	SHEQ	Throughout construction
6.	**AIR QUALITY**						
Activities: Vehicle and machinery emissions and vehicle movement on unprepared surfaces							
6.1	Vehicle exhaust emissions - air	Minimise and limit emissions	None	All machines and vehicles must be well maintained to reduce the risk of excessive exhaust emissions.	Conduct regular inspections during construction	Operations Supervisor	Throughout construction

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
6.2	pollution			Prohibit idling of vehicles when not in use.			
Activities: Site preparation and construction activities							
6.3	Dust emissions - Earth works and excavations, movement of vehicles and machinery	Minimise and limit fugitive dust emissions	None	Dust suppression measures to be implemented as far as reasonably as practicable.	Conduct regular inspections during construction	Operations Manager/ Site Manager	Throughout construction
6.4				Implement speed limits for construction vehicles to prevent excessive dust generation.			
7.	**SOIL AND SURFACE WATER CONTAMINATION**						
Activities: Storage and handling of hazardous substances, oil and diesel spillages from vehicles,							
7.1	Soil and surface water contamination- Introduction of sediments to river system Soil and surface water contamination- use of chemicals and Hydrocarbons; spillages from	Prevent soil and stormwater contamination	None	Maintain a buffer between the river and construction activities	Conduct regular inspections during construction	ECO and Operations Manager/ Site Manager	Throughout construction
7.2				All hazardous substances must be stored in dedicated areas, and good housekeeping must be applied			
7.3				Hazardous materials must be stored within a bunded area on an impermeable surface or, where bunding is not applicable, in a raised containment area on an impermeable surface.			
7.4				MSDS's of materials kept on-site must be readily available			
7.5				Spill-sorb or a similar absorption material must be kept on site and used to clean up hydrocarbon spills as and when it occurs.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
7.6	vehicles and machinery			Personnel must be trained on spill response and the use of available spill response equipment	Training records		
7.7				All construction vehicles and machinery must be properly maintained to prevent hydrocarbon leaks and spillages.	Conduct regular inspections during construction		
7.8				Drip trays must be placed underneath parked vehicles, when parked for extended periods of time or where leaks have been identified.			
7.9				Contaminated rubble or soil must be stored in a separate and demarcated area before being disposed of at a licensed landfill site.			
8.	**GENERAL**						
Activities: Construction activities and operations							
8.1	Damage to property Non-compliance to legal requirements	None	None	Proper and continuous liaison between Binneplaas Boerdery, the contractors and stakeholders must be undertaken to ensure everyone is informed at all times;	Undertake quarterly internal audits	ECO and Operations Manager	When necessary
8.2	Inappropriate management of onsite activities			Documentation proving compliance to conditions or requirements of the EMPr or authorisations held by Binneplaas Boerdery must be kept on file and made available to external auditors as and when requested.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
8.3				Site inspections must be undertaken in order to monitor the progress of the construction activities as well as to identify any non-compliances to the EMPr or legal authorisations held by Binneplaas Boerdery			
8.4				Relevant personnel must be appointed to implement this EMPr as well as deal with all stakeholder related matters.			
8.5				Quarterly internal audits must be carried out during the construction phase. All findings must be listed in a formal report which must be kept on file and made available to external auditors upon request.			

5.2. Environmental Management Programme for the Operational Phase

Table 4: EMPr for the operational phase

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
1.	**HEALTH AND SAFETY**						
Activities: Public Safety							
1.1	Occupational exposure impacting on personal health and or wellbeing.	Prevention of drownings in dam infrastructure	None	Restrict access to dams.	Access control records/ documented access procedure Conduct regular inspection of signages for integrity and visibility	Operations Manager	Ongoing
1.2				Place clearly visible signs and warnings placed around the dams.			
Activities: Maintenance Activities							
1.14	Occupational exposure impacting on personal health and or wellbeing -	Prevention of injuries and health impacts on personnel	Safe working conditions	Maintenance activities must be conducted by duly authorised personnel	Verify credentials prior maintenance activities Conduct regular inspections of PPE for all personnel	Operations Manager	On-going
1.15				All employees conducting maintenance must be equipped with personal flotation devices.			
2.	**WASTE**						
Activities: Management of Waste Generated on Site							

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
2.1	Incorrect handling, storage, recycling, recovery, and treatment of waste generated on site leading to environmental pollution	Eliminate or minimise pollution and nuisance conditions. Correct waste management Prioritise recycling and re-use of waste material to prevent unnecessary disposal	Effective waste management practices Waste separations to promote recycling, recovery and treatment. Compliance to all environmental authorisations and the National Norms and Standards	Waste Management must be in line with the relevant South African legislation, regulations and or policies. Where not provided, waste must be recycled, recovered and or treated in terms of best practices	Internal and External Audit Reports Conduct regular inspections Training records Waste management records	ECO/ Operations Manager	Ongoing
2.3				Ensure processes are efficient and promote optimal recycling, recovery or treatment of waste.			
2.4				Avoid mixing of waste that could lead to a reduced recyclability of the materials.			
2.5				Ensure general waste is stored in appropriate bins which is equipped with lids to prevent litter.			
2.7				Use only credible and authorised waste contractors to transport and manage waste. Waste management records must be kept accordingly for audit purposes.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
2.10				Implement good housekeeping practices, ensure the waste storage areas do not exceed intended capacity and ensure the burning of waste is prohibited on site			
3.	**AIR QUALITY**						
Activities: Vehicle Movement, emissions from exhausts							
3.1	Vehicle emissions- maintenance activities	Minimise vehicle emissions	None	Vehicles must not idle when not in use.	Inspect Vehicles Regularly Vehicle maintenance records	Operations Supervisor and ECO	Ongoing
3.2				Vehicles must be well maintained			
4.	**WATER QUALITY**						
Activities: Operational Process.							
4.1	Alteration of river flow regimes- Reduction of downstream flow Aquatic ecosystem impacts- Potential entrapment of aquatic organisms at abstraction points	Prevent environmental contamination	Prevent pollution of receiving environment.	Maintain the ecological reserve of the river.	Inspect stormwater channels to detect litter ingress. Conduct inspections to identify any spills Maintain safe disposal certificates for the disposal of absorbent material	Operations Supervisor and ECO	Ongoing
4.2				Monitor the abstraction volumes.			
4.3				Water stored in dams, that will not be utilized for irrigation, must be pumped back (unchanged) into the river.			
4.4				Install fish screens at abstraction points.			
4.5				Avoid abstracting during sensitive ecological periods.			
4.6				Install liner at the bottom of the dam.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA (TARGETS)	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PERSON / PARTY	TIME-FRAME
4.6	Seepage and groundwater impacts- Potential alteration of groundwater levels			Monitor dam water levels.			
4.7				Monitoring of water quality regularly.			
4.8				Consider aeration if water will be standing for long periods of time.			
4.9				Ensure hydropower infrastructure is kept in good condition			
5.6				A spill kit must be available to clean up spillages.	Inspect spill kits regularly		
5.7				Hazardous materials to be handled by duly trained personnel	Training records		Ongoing
7.	**USE OF NATURAL RESOURCES**						
Activities: Water, Electricity, and other Natural Resource Consumption							
7.1	Wasteful use and resources like water and electricity leads to unnecessary impacts on national resources.	Prevent wastage of natural resources	Minimum impact on natural resources	Ensure that abstracted water is used sustainably.	None	ECO	Duration of Operational Phase
7.2				Record abstraction rates.			
7.3				Ensure that water abstracted does not exceed the catchment limit.			
7.4				Conduct regular maintenance of water infrastructure.			

5.3. Environmental Management Programme for the Decommissioning and Closure Phase

Table 5: EMPr for the decommissioning and closure phase

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PARTY	TIME-FRAME
1.	**AIR QUALITY**						
Activities: Vehicle emissions to the atmosphere							
1.1	Vehicle exhaust emissions - air pollution	Prevent emissions	None	All vehicles to be maintained in good working order to keep their atmospheric emissions under control.	None	Contractor	During closure phase
1.2				Prohibit idling of vehicles when not in use			
Activities: Fugitive dust emissions							
1.3	Demolition of structures and concrete breaking- Fugitive dust emissions	Prevent emissions	None	Ensure adequate dust suppression measures as far as reasonably possible	Conduct regular inspections	Contractor	During closure phase
1.4				Demolition and concrete breaking activities to be avoided as far as reasonably possible during high wind events			
2.	**STORM WATER**						
Activities: Hydrocarbon management							
2.1	Storm water pollution	Prevent spillages	None	Place drip trays beneath vehicles parked for longer periods.		Contractor	During closure phase
2.2				Spill kits must be available and train relevant employees to respond to spills.			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PARTY	TIME-FRAME
2.3				Adequate maintenance of equipment to prevent spills.	Conduct regular inspections of spill response equipment and drip trays Training records		
3.	**WASTE MANAGEMENT**						
Activities: Waste generation							
3.1	Windblown litter – nuisance conditions Aesthetic impacts	Eliminate or minimise pollution and nuisance conditions Correct waste management	Prevent wind-blown litter Effective waste management practices	Store general and hazardous waste separately in their designated storage areas, designed to prevent windblown litter	Inspect waste storage area regularly to ensure good house keeping Keep waste management/ safe disposal records	Contractor	During closure phase
3.2				Appropriate skips or waste containers that are clearly labelled must be provided to store waste			
3.3				Prevent nuisance conditions and overfilling of skips and include the inspections thereof in the weekly ECO inspections			
3.4				Implement good housekeeping measures and prohibit the burning of waste on site			
3.5	Soil, water and air pollution, human health risk	Eliminate or minimise pollution and health risk	Visual and documentary confirmation of correct disposal	Maintain an inventory of waste generated and keep records of how it was managed. Ensure that only duly authorised/licensed contractors are used and the safe disposal certificates kept on file for at least 5 years		Contractor	During closure phase

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PARTY	TIME-FRAME
4.	**Safety**						
4.1				Ensure all personnel is equipped with adequate PPE appropriate for the work area	Conduct regular inspections Maintain PPE register		
4.2				The dismantling of electricity infrastructure to be undertaken by a duly trained and authorised service provider	Verify credentials of personnel before decommissioning commences and keep copies of certification/training for record keeping Conduct visual inspection		
4.3							
4.4				The lockout/Tagout (LOTO) systems must be implemented prior removal to ensure that equipment is properly shut down and isolated from all power sources	Implement a LOTO documentation system		
5.	**Noise**						
Activities: Decommissioning Activities							
5.1	Noise Pollution	Minimise exposure to excessive noise	None	Keep decommissioning activities to daytime hours between 6:00 to 18:00 to minimise noise disturbances	Conduct regular inspections and Maintain PPE register	Contractor	During closure phase
5.2				Ensure the vehicles and machinery used during decommissioning are well maintained to limit excessive noise generation			

REF NR	POTENTIAL IMPACT	OBJECTIVES	PERFORMANCE CRITERIA	MITIGATION MEASURE(S)	MONITORING AND INSPECTIONS	RESPONSIBLE PARTY	TIME-FRAME
				Provide hearing protection for all employees and contractors exposed to high levels of noise on site			
6.	**Traffic**						
Activities: Movement of vehicles							
6.1	Nuisance conditions to surrounding land users and residents	Minimise traffic	None	Ensure trucks and vehicles are road worthy to avoid unnecessary breakdowns	Maintain vehicle maintenance records	Contractors	During closure phase
6.2				Limit transportation of materials to off peak times when possible			
6.3				Provide safe parking space (within the facility where possible) to trucks and vehicles between loading and dispatch	None		
7.	**SOCIAL**						
Activities: Employment opportunities							
7.1	Loss of employment opportunities when site closes	• To benefit the local economy • To mitigate the impacts on employees and the local economy	None	Engagement with employees in advance Redistribute employees to other operational units as far as possible	None	Contractor	During closure phase

6. DOCUMENT RETENTION AND RECORD KEEPING

According to accepted international standards sufficient records shall be established and maintained to provide evidence of conformity to requirements and the effective operation of the relevant management systems throughout each phase of operation. Records shall remain legible, readily identifiable and retrievable in all appropriate areas to demonstrate conformance to requirements and to have an audit trail, which to verify the effective operation of Environmental Management.

Documents generated and used during each phase of operation as set out in Tables 3, 4 and 5 above must be managed in accordance with the proposed measures set out below.

6.1. Hard copy retention schedule

Table 6: Document Retention Procedure

IDENTIFICATION OF RECORDS	RETENTION TIME		
	ACTIVE	HISTORY	RECORDS
Monitoring and measuring data	20 years	10 years	10 years
Disposal Certificates	20 years	10 years	10 years
Reports with State Departments	Indefinite	Indefinite	Indefinite
Corrective Action & Verification Forms	24 month's records	13 – 24 Months	5 years
Internal Audit Reports	24 month's records	13 – 24 Months	5 years
External Audit Reports	20 years	10 years	10 years
Copies of legal appointment letters	Valid period	10 years after cancellation	10 years after cancellation
Documents demonstrating compliance to EA and EMPr conditions	Valid period	5 years	5 years

6.2. General requirements

- Any non-compliances to the requirements of the EMPr or Legal Authorisations held by **Binneplaas Boerdery** must be reported to the relevant authorities within 48 hours.
- All documents shall be kept on site and be available for monitoring and auditing purposes.
- An Environmental auditor may require access to documentation for auditing purposes when site visits are conducted.
- The documentation shall be signed by all parties to ensure that such documents are legitimate.

- Regular monitoring of all site works by the Site Manager, Operations Manager, ECO and SHEQ Manager is imperative to ensure that any problems encountered are resolved punctually and amicably.
- When the Site Manager is unavailable, the ECO shall be kept up to date by the Operations Manager on all works to ensure no problems arise.

Data management, record keeping and reporting to be conducted in terms of requirements and frequencies specialized by the relevant licence authorisation or permits.

7. MONITORING PROGRAM

A monitoring programme will be in place not only to ensure conformance with the EMPr, but also to monitor any environmental issues and impacts which have not been accounted for in the EMPr that are or could result in significant environmental impacts for which corrective action is required. Binneplaas Boerdery will stipulate the period and frequency of monitoring required. This will be determined in consultation with relevant stakeholders and authorities.

The following monitoring and auditing schedules are proposed for the project and Binneplaas Boerdery should incorporate the monitoring and auditing requirements into their EMS;

Table 7: Monitoring Program

Frequency	Monitoring applicable	Details of monitoring
Waste management		
Daily	Site monitoring	• Date and time of entry into facility
	Duty of Care and Health and Safety – accidents and incidents	• Register all incidents. • Register all complaints. • Mitigation and preventative measures • Further actions to be monitored

7.1. Non-Conformance and Corrective Action

The monitoring of the operations at the site may identify non-conformances of the EMP. Non-conformances may also be identified through incidents, emergencies or complaints. In order to correct these non-conformances, the route course must be determined, and corrective actions must be identified.

8. TRAINING AND AWARENESS

It is important to ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. To achieve effective environmental management, it is important that employees, Contractors and Subcontractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMPr.

The objectives of an Environmental Awareness Plan are to:

- Inform employees and contractors of any environmental risks which may result from their work;
- Inform employees and contractors of the manner in which the identified possible risks must be dealt with in order to prevent degradation of the environment; and
- Optimise the awareness of those involved in the plant upgrade and expansion construction and operational activities which have the potential to impact negatively on the environment (e.g. oil leaks or spillages from equipment), and in doing so, promote the global goal of sustainable development.

8.1. Implementation

Environmental principles regarding the construction and operation of the proposed plant upgrade and expansion will be communicated to the contractor and its team (if construction will be undertaken by an external party), any newly appointed employees and visitors entering the construction and/or plant area to conduct work.

8.2. Content of environmental awareness plan

Key elements of the environmental awareness plan that will be presented at inductions include:

- Binneplaas Boerdery's vision and policy;
- An explanation of sustainability;
- Surface and groundwater management;
- Air quality and odour management;
- Energy conservation;
- Waste management;
- The community and interested and affected parties;
- Reporting incidents; and
- Employee responsibilities.

9. EMERGENCY PREPAREDNESS PLAN

Binneplaas Boerdery must develop an emergency response plan that response to potential emergency situations that could arise from the construction and operation phases, and should any activity, not covered by this plan, be conducted by the contractor it will be the contractor's responsibility as part of his method statement to include an emergency response for that particular activity.

The plan is to be updated as per the requirements on a regular interval, and the reader should always ensure that they have the latest copy at hand.

10. CONCLUSION

The successful implementation of this EMPr and its management actions will ensure that compliance with the environmental legislative requirements are achieved and that the likelihood of impacts occurring is reduced sufficiently. This EMPr also outlines the required environmental awareness training of employees, supervisors, contractors and visitors, which will ensure that management of the environment will occur through cooperation.

The success of this EMPr and overall sustainability of the project will further increase as a result of the defined organisational and administrative arrangements for environmental management and monitoring of the proposed project as well as procedures for environmental control, in the event of pollution (spillage) or similar events requiring action.

PROCEDURE APPROVAL RECORD

Procedure Name:		Environmental Management Program	
Revision Nr:	001	Replace Revision Nr:	N/A

RECORD OF REVISIONS AND ISSUES REGISTER

Date	Revision	Description	Issued to	Drafted by

Authorised by: Frik Roets

Approval Signature:

Appendix I

Other Information

Appendix I-1

Screening Tool

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: Not Yet Available

Project name: Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams

Project title: Application for an Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land adjacent to the Suikerbosrand River.

Date screening report generated: 01/04/2026 09:47:14

Applicant: Binneplaas Boerdery

Compiler: Zantow Environmental Consulting Services

Compiler signature:

……

Application Category: Utilities Infrastructure|Electricity|Generation|Renewable|Hydro

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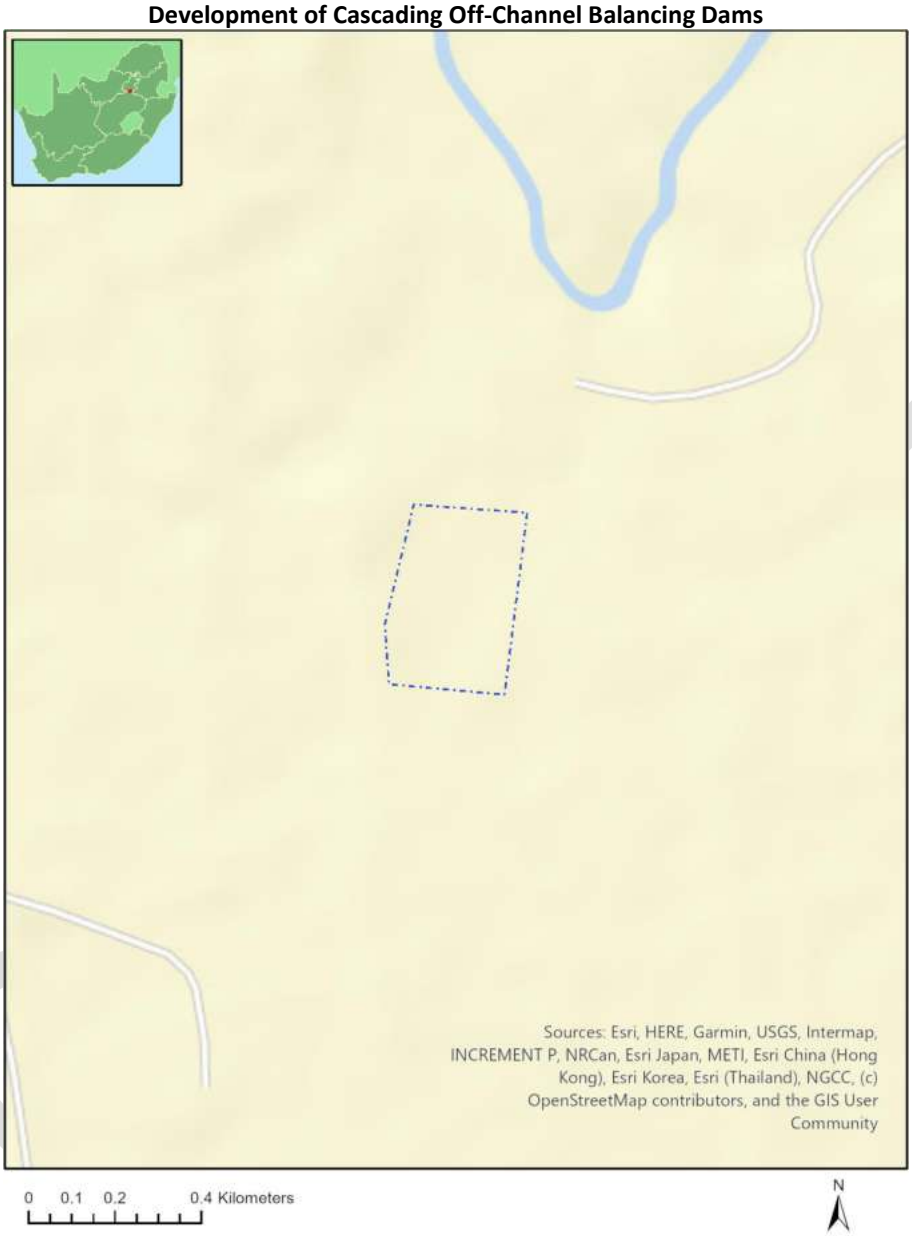
Proposed Project Location

Orientation map 1: General location

General Orientation: Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams



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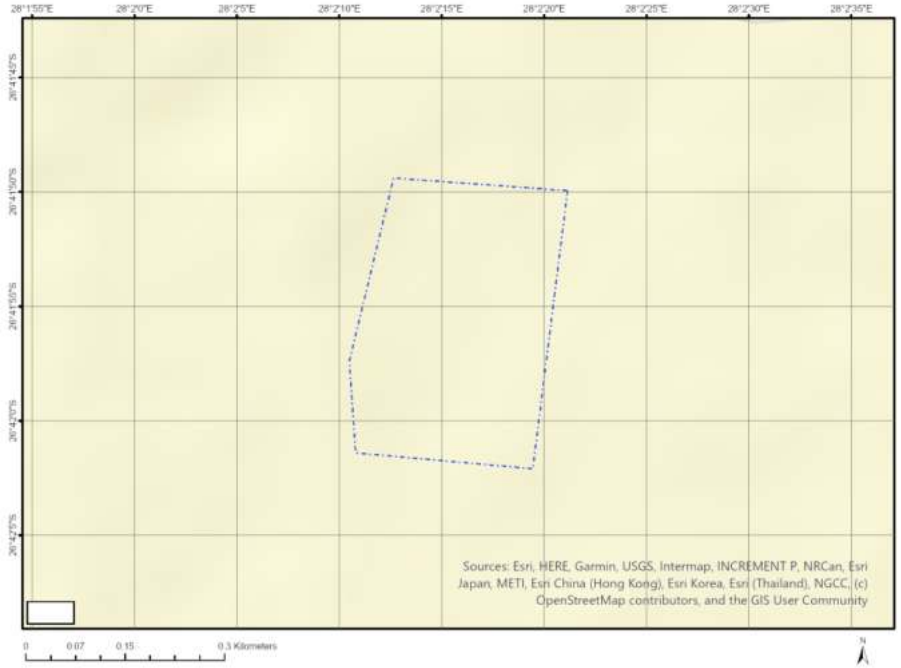
Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	UITVLUGT	434	0	26°40'30.43S	28°1'41.34E	Farm
2	UITVLUGT	434	9	26°41'37.59S	28°2'20.45E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/2624	Solar PV	Approved	3
2	14/12/16/3/3/2/2599	Solar PV	Approved	7.6
3	14/12/16/3/3/2/2600	Solar PV	Approved	5.4
4	12/12/20/2060	Solar PV	Approved	26.7
5	14/12/16/3/3/2/753	Solar PV	Approved	6.1
6	14/12/16/3/3/2/2601	Solar PV	Approved	4.1

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

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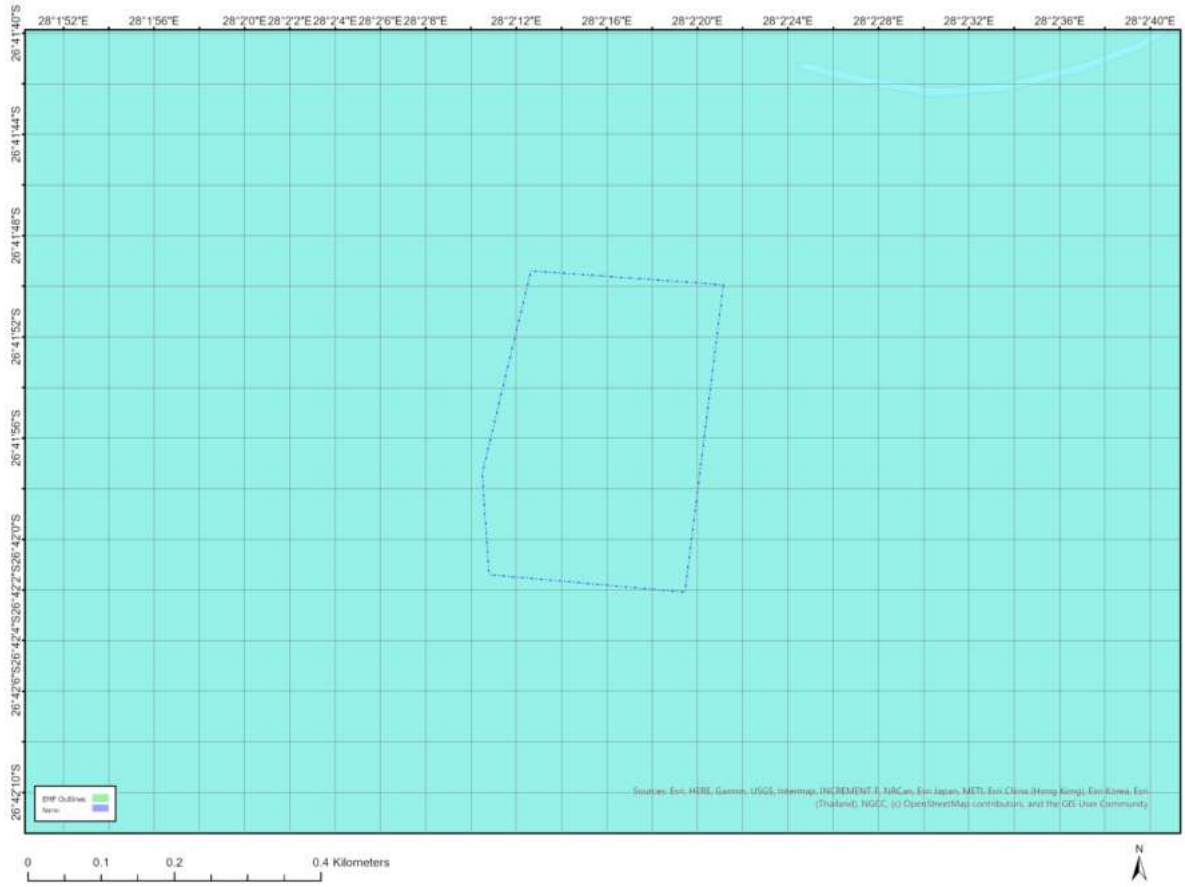
Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Gauteng EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/GPEMF_2021_Gazette_and_summary.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Utilities Infrastructure|Electricity|Generation|Renewable|Hydro**.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication

Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf
Air Quality-Vaal Triangle Airshed Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Final_VTAPA_AQMP_20090408_-15_April_2009.pdf
Strategic Gas Pipeline Corridors-Phase 3: Richards Bay to Gauteng	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/GuidanceforHIA.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/GuidanceforPIA.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf

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6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Avian Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Avifauna_Assessment_Protocols.pdf
8	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
12	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

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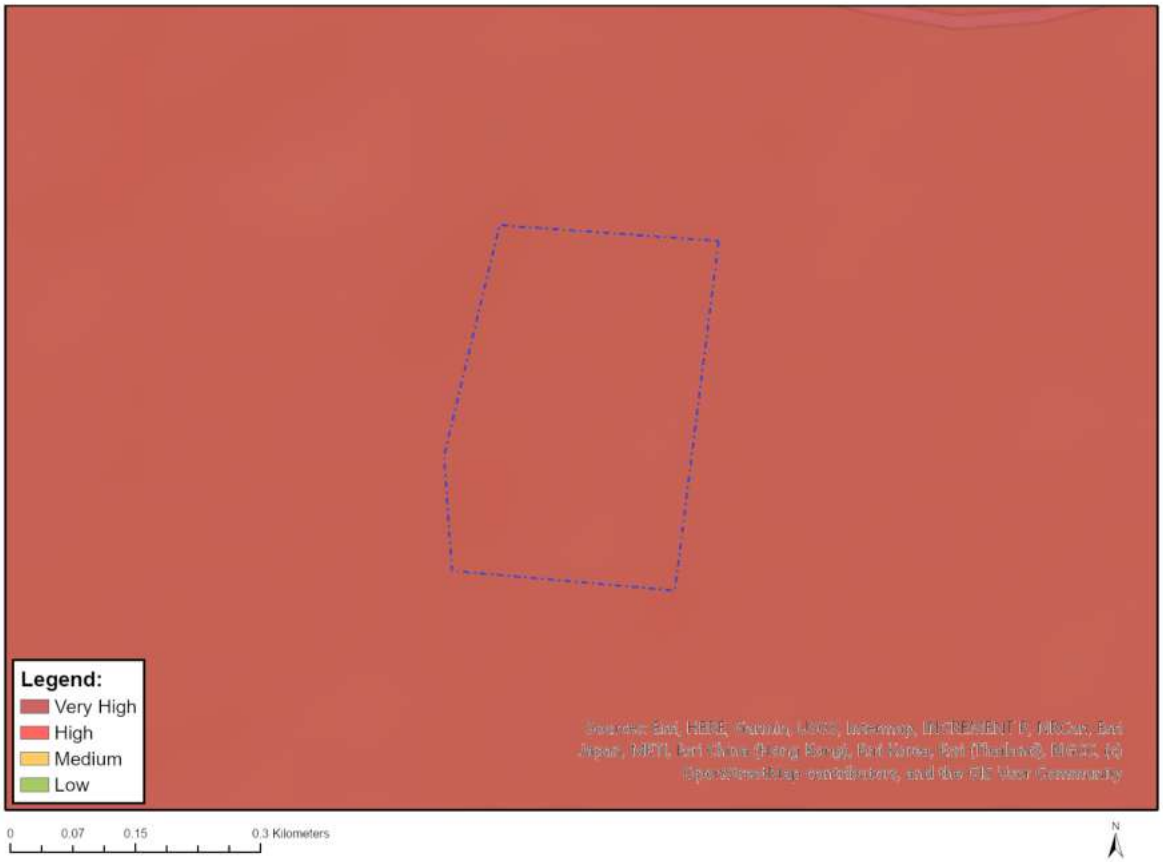
Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

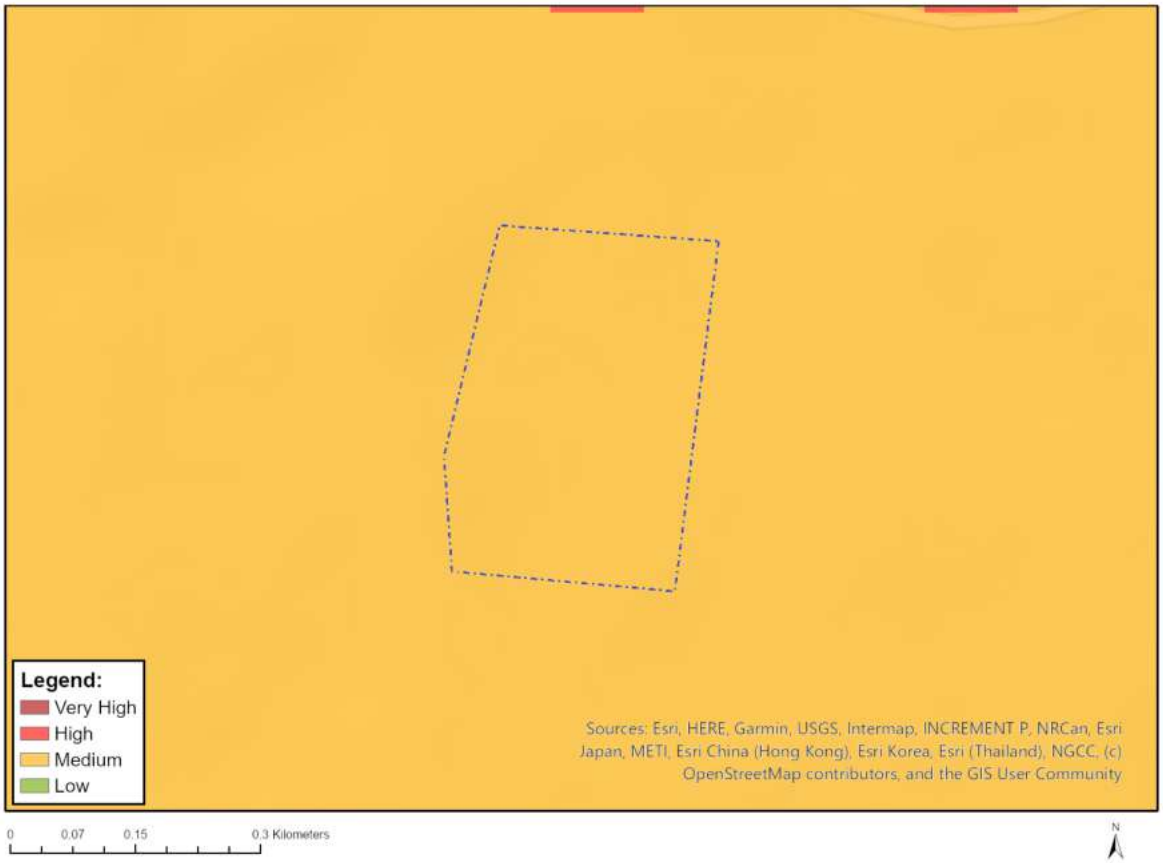


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Rainfed Annual Crop Cultivation / Planted Pastures
High	09. Moderate-High
High	08. Moderate
Very High	Suikerbosrant PAA

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Insecta-Lepidochrysops procera
Medium	Insecta-Orachrysops mijburghi
Medium	Mammalia-Hydrictis maculicollis

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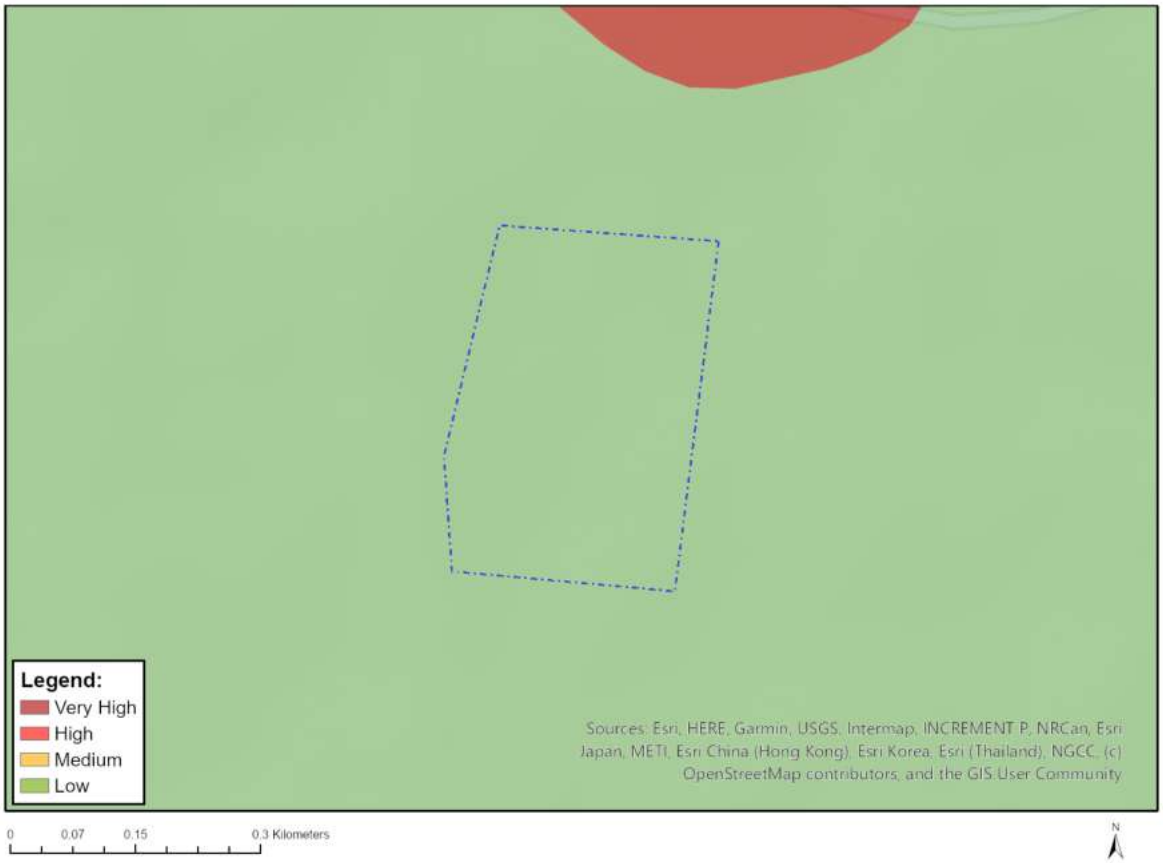
MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

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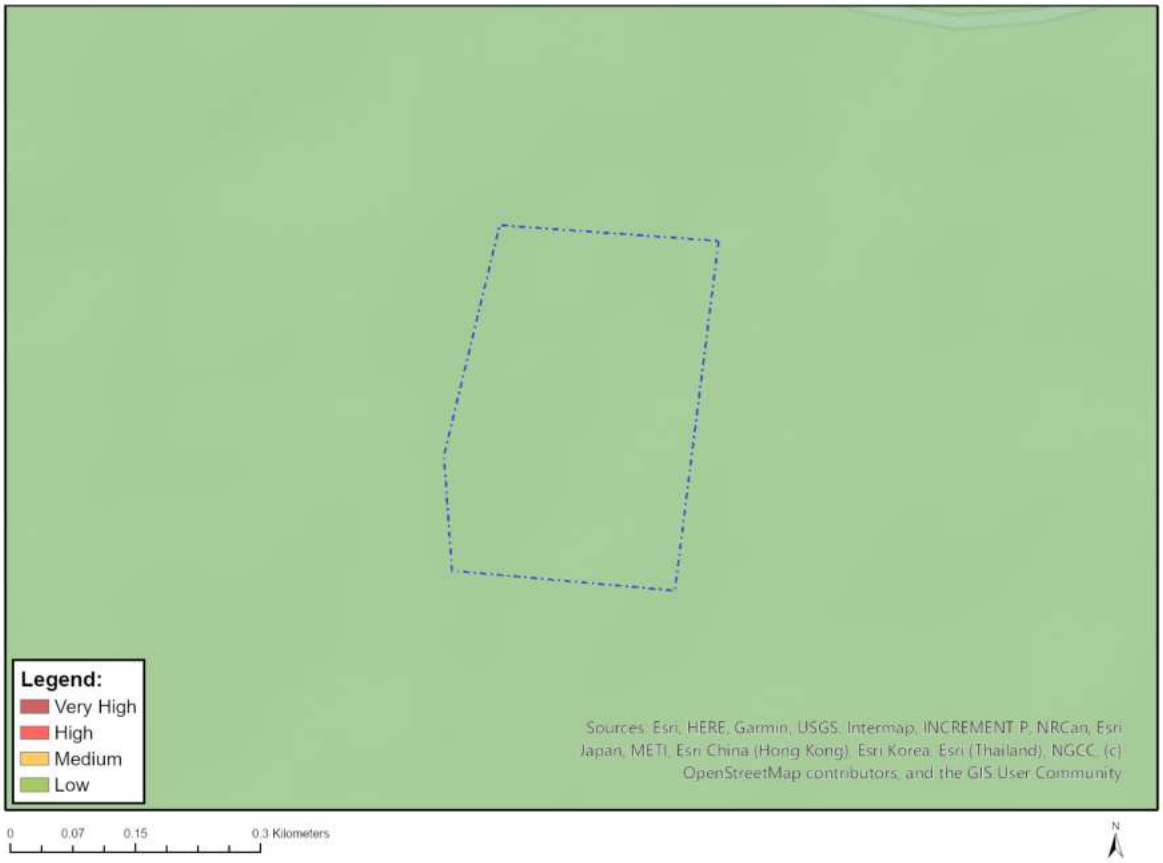
MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

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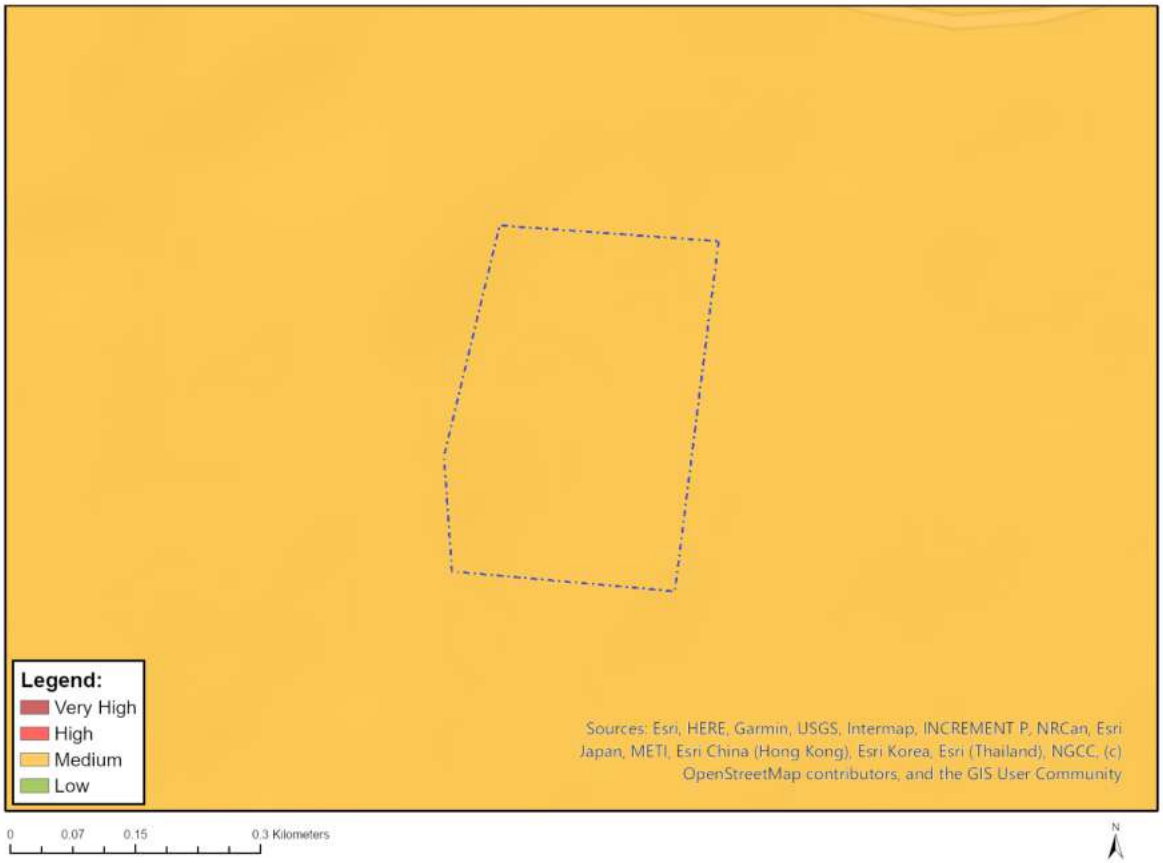
MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome

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MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

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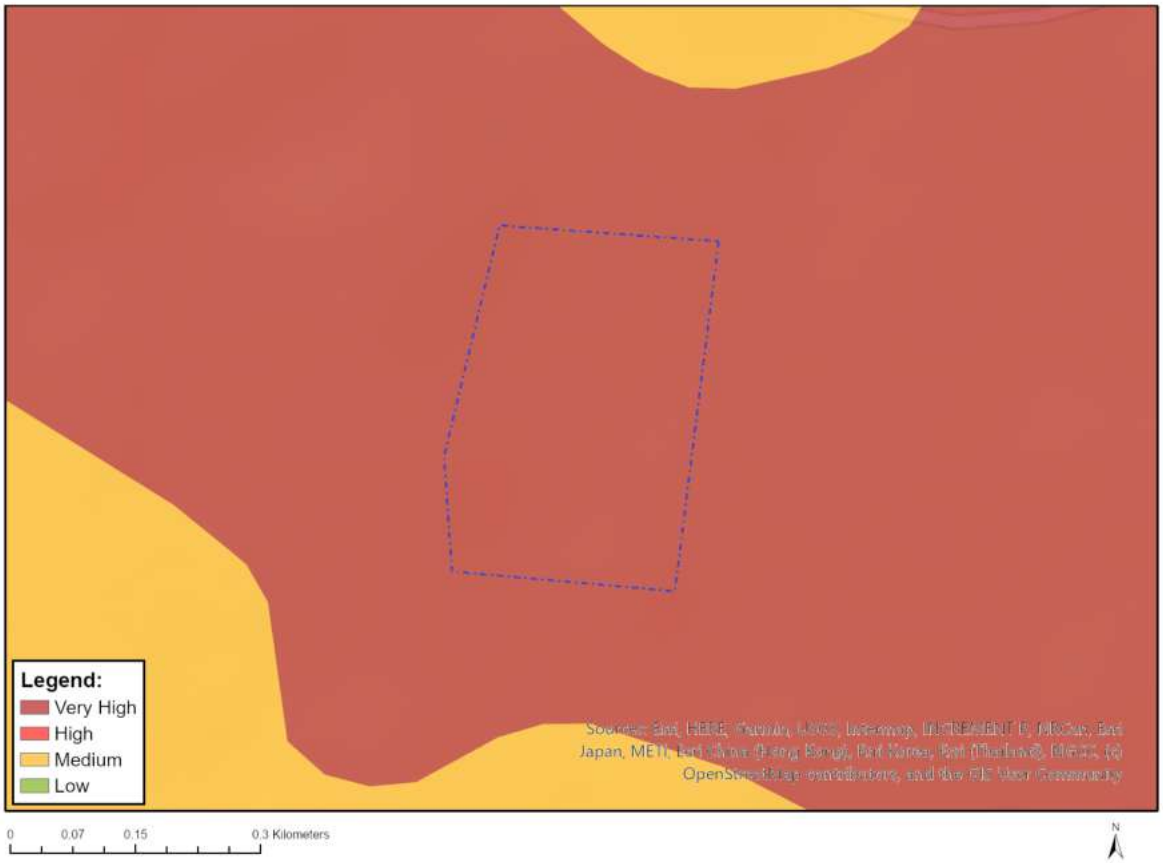
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Features with a Very High paleontological sensitivity

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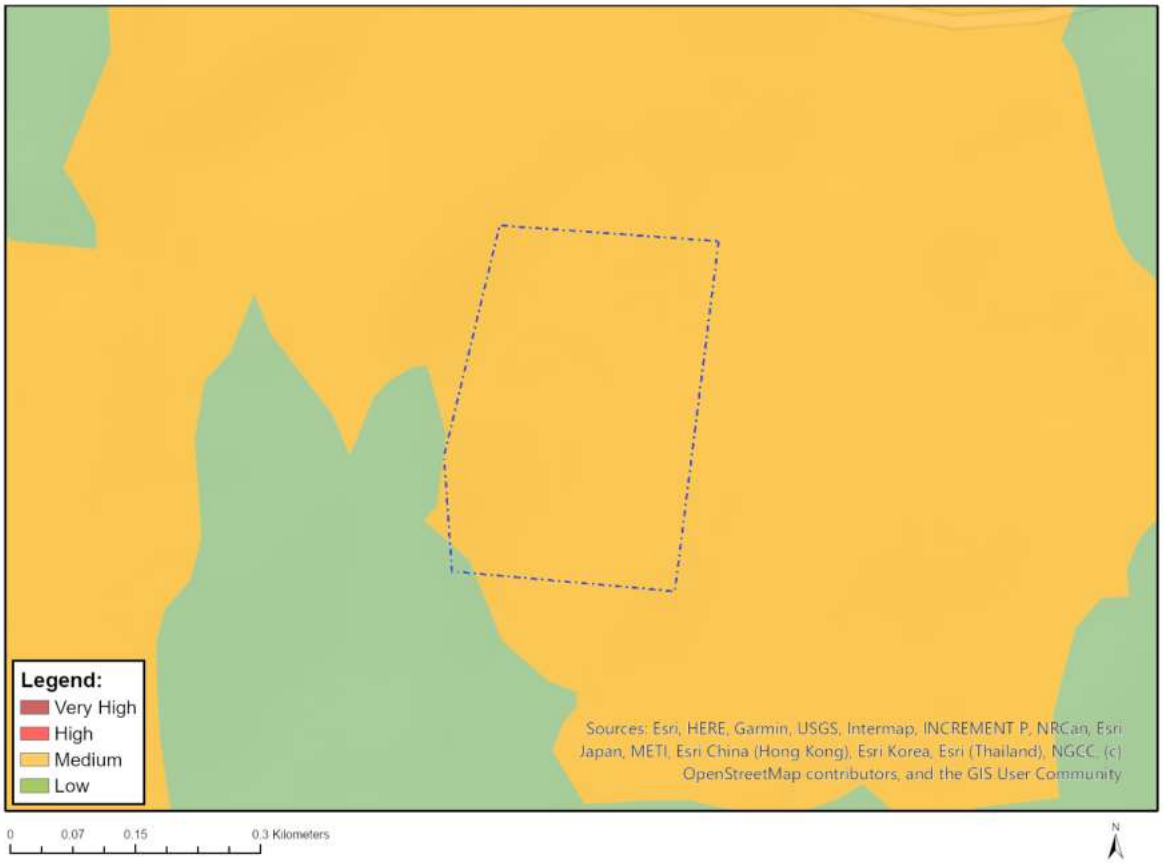
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Delosperma macellum
Medium	Sensitive species 691

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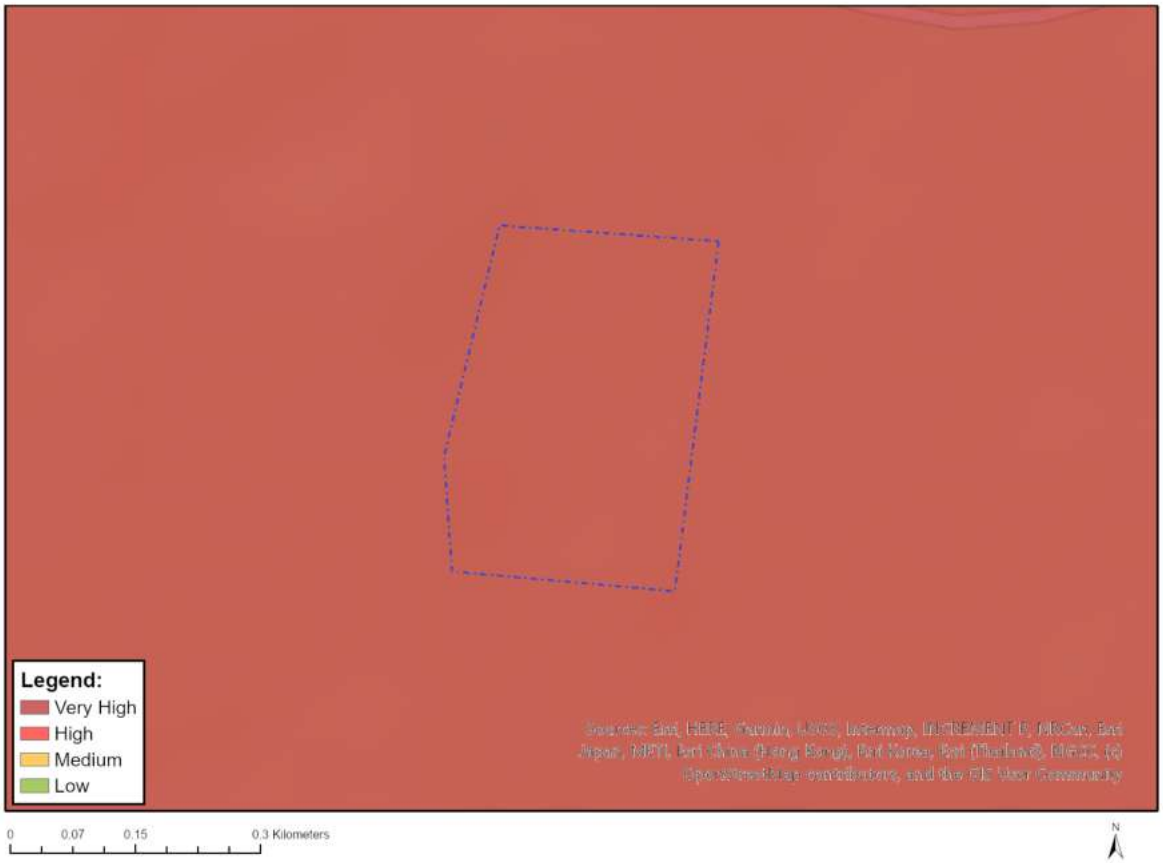
01/04/2026

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1
Very High	ESA 2
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	VU_Soweto Highveld Grassland

Disclaimer applies
01/04/2026

Appendix I-2

Site Sensitivity Report

ENVIRONMENTAL SITE SENSITIVITY VERIFICATION IN TERMS OF THE NEMA EIA REGULATIONS AND APPLICATON FOR AN ENVIRONMENTAL AUTHORISATION FOR THE DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND HYDROPOWER-ASSISTED IRRIGATION SYSTEM

AT

BINNEPLAAS BOERDERY

APPLICATION REFERENCE: GAUT 002/26-27/E0011

Report date: 9 April 2026

Report No: 4237-ZANBB-2026

General Information	
Report Name:	**Environmental Site Sensitivity Verification in Terms of the NEMA EIA Regulations and Application for an Environmental Authorisation for the Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System at Binneplaas Boerdery**
Site Verification Date:	15th January 2026
Report Date:	9th April 2026
Environmental Consultant	**Zantow Environmental Consulting Services CC** Coliseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911 PO Box 3858 Vanderbijlpark, 1911 **Contact Person:** Karien Zantow Tel: 083 384 3641 Fax: 016 932 4976 Email: karien@zantow.co.za
Client:	**Binneplaas Boerdery** Portion 9 of Erf 434 Uitclucht Farm Cooperville AH Midvaal **Contact Person:** Frik Roets Cell: 082 977 1128 Email: frikroets@vodamail.co.za
Report Compiled by:	Christiaan Tolken
Internal Reviewer:	Karien Zantow
Report Nr:	4237-ZANBB-2026

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1. INTRODUCTION

1.1. Introduction to the proposed activity

Binneplaas Boerdery is located on Portion 9 of Erf 434 Uitvlucht Farm in Cooperville AH, Gauteng. The property is within the jurisdiction of the Midvaal Local Municipality within the Sedibeng District Municipality, in the Gauteng province of South Africa. The property is zoned for agricultural land use and is currently being utilized as an agricultural holding. The Suikerbosrand River runs through the farm property, forming a natural watercourse within the site.

Binneplaas Boerdery proposes the construction of three aboveground balancing dams. The dams will be utilized for the storage of water for irrigation purposes as well as the generation of electricity. The natural elevation of the property will allow Binneplaas Boerdery to install hydropower-assisted pumps for the transport of water from the Suikerbosrand river to their irrigation circles.

The proposed project will allow Binneplaas Boerdery to operate without the need for supplementation of municipal water and electricity for their operations.

The proposed construction of balancing dams for electricity generation triggers the following listed activities within the GN. R 983 Listing Notice 1:

Table 1. Activities triggered in GN. R 983.

Legislation, policy of guideline	Description of compliance
GN. R 983, 8 December 2014. Listing Notice 1, Activity 1	" the development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) … (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"
GN. R 983, 8 December 2014. Listing Notice 1, Activity 13	"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."
GN. R 983, 8 December 2014. Listing Notice 1, Activity 27	"The clearance of an area of 1 hectares 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."

Zantow Environmental Consulting Services CC (Zantow Environmental) has been appointed by Binneplaas Boerdery as an Independent Environmental Assessment Practitioner (EAP) to facilitate the application processes to obtain the required environmental authorisation.

1.2. Purpose of the report

On the 20th of March 2020, the Department of Forestry, Fisheries and the Environment (DFFE) published procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of section 25(5)(a) an (h) and 44 of the National Environmental Management Act, 1998, when applying for an Environmental Authorisations. These regulations requires that an applicant must conduct an environmental sensitivity assessment of the site by utilising the Departments national web based environmental screening tool.

When environmental sensitivities are identified for the site by utilising the screening tool, the Environmental Assessment Practitioner (EAP) must conduct a site sensitivity verification to confirm or

dispute the current use of the land as well as the environmental sensitivity as identified by the screening tool.

The outcome of the site verification must be presented in the form of a report and contain the minimum requirements as set out in GN No. 320.

The aim of the Environmental Site Sensitivity Verification Report is to:

- Verify land use and theme sensitivities as identified by the DFFE Screening Tool;
- Confirm or disconfirm the need for a particular specialist assessment(s) as indicated by the DFFE Screening Tool; and
- Should the need for a specialist assessment be challenged, provide a motivation as to why the proposed a particular theme(s) is not applicable to the proposed development.

1.3. Expertise of the EAP conducting the site verification

Zantow Environmental Consulting Services has been appointed by Binneplaas Boerdery to facilitate the process for the Checklist of the Applicability of the NEMA EIA regulations for the proposed project.

The following is a description of the EAP's expertise:

➢ **Karien Zantow**

Karien Zantow obtained her degree from the University of Pretoria in BSc (Agric) Animal Science. The main subjects were Physiology, Nutrition, Ecology, Biochemistry, Toxicology, Plant production, Soil Science and Pasture Science. This degree provided her with a sound base and understanding of the environment.

Karien extended her knowledge in the environmental sciences by completing the BSc (Hons) Environmental Technology at the University of Pretoria. The honours degree presented by the Chemical engineering department addressed Environmental management that included South African environmental legislation, ISO 14001, Environmental impact assessments, Life cycle assessment, auditing and public participation. As well as the three specialized fields of study: Water (wastewater treatment and design), air (abatement equipment) and solid/hazardous waste management. She also completed a Post Graduate diploma in Environmental Sciences at the University of Witwatersrand which focussed on Environmental Law, Environmental Chemistry, Air quality and Energy, Waste and Wastewater management and Environmental Impact Assessments.

Karien Zantow has more than 15 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment.

- Teaching Business, subcontracted to Barlow World
- Sappi Kraft Ngodwana– As environmental engineer
- ArcelorMittal South Africa Vanderbijlpark Works
- Zantow Environmental Consulting Services

During her career she has been involved with many large-scale site characterisation and remediation projects from the conceptual phase to implementation. Other projects include a variety of Waste Management Licences, Atmospheric Emissions Licences, other EIA's and Environmental Audits. Moreover, emission sampling and reporting forms a core component of Karien's scope of work.

Karien is a registered Natural Science Professional with the South African Council for Natural Scientific Professions (Reg Nr 400114/14) as well as a Registered EAP (Reg Nr 2019/1871).

Karien Zantow
Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871

- **Christiaan Tolken**

Christiaan obtained his B.Sc. Ecology degree from the University of Pretoria. The main subjects included Zoology, Botany, and Geographic Information Systems (GIS). The degree provided him with a thorough comprehension of biodiversity, evolutionary biology, the interactions between animals and their surroundings, and the effects of human activity on ecosystems. Having the ability to evaluate complicated environmental problems allows him to utilize environmental monitoring skills to provide detailed descriptions of the environment.

After completion of his degree, he decided to gain valuable work experience in the Environmental Management field. He joined Zantow Environmental Consulting Services in 2024. During his time at Zantow Environmental Consulting, Christiaan gained and utilized multiple environmental assessment techniques with regards to air and water monitoring, Environmental Audits, and Environmental reporting. He has also completed two short courses from Business Success Solutions regarding Environmental Law and Compliance as well as Environmental Impact Assessments and Decision Making.

Christiaan is a registered Candidate EAP (Reg Nr 2024/9273) at the Environmental Assessment Practitioners Association of South Africa.

Christiaan Tolken
Environmental Consultant
EAPASA Reg Nr 2024/9273

2. SITE SENSITIVITY VERIFICATION

The National web based environmental sensitivity screening tool was utilised in order to identify the potential site sensitivities.

The screening tool identified the following sensitivities:

Table 2: Site Sensitivities as identified by the Screening Tool

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

In addition to compiling the Screening Tool Report, a site visit was conducted on the 15th of January 2026 and in order to verify the current land use and environmental sensitivity of the site. Thereafter a desktop study was undertaken in order to ensure that the environmental site sensitivities identified are applicable.

An external specialist (Excellence Ecology) was also appointed to undertake a terrestrial biodiversity site sensitivity assessment of the site. A copy of the report is attached to the Draft BAR.

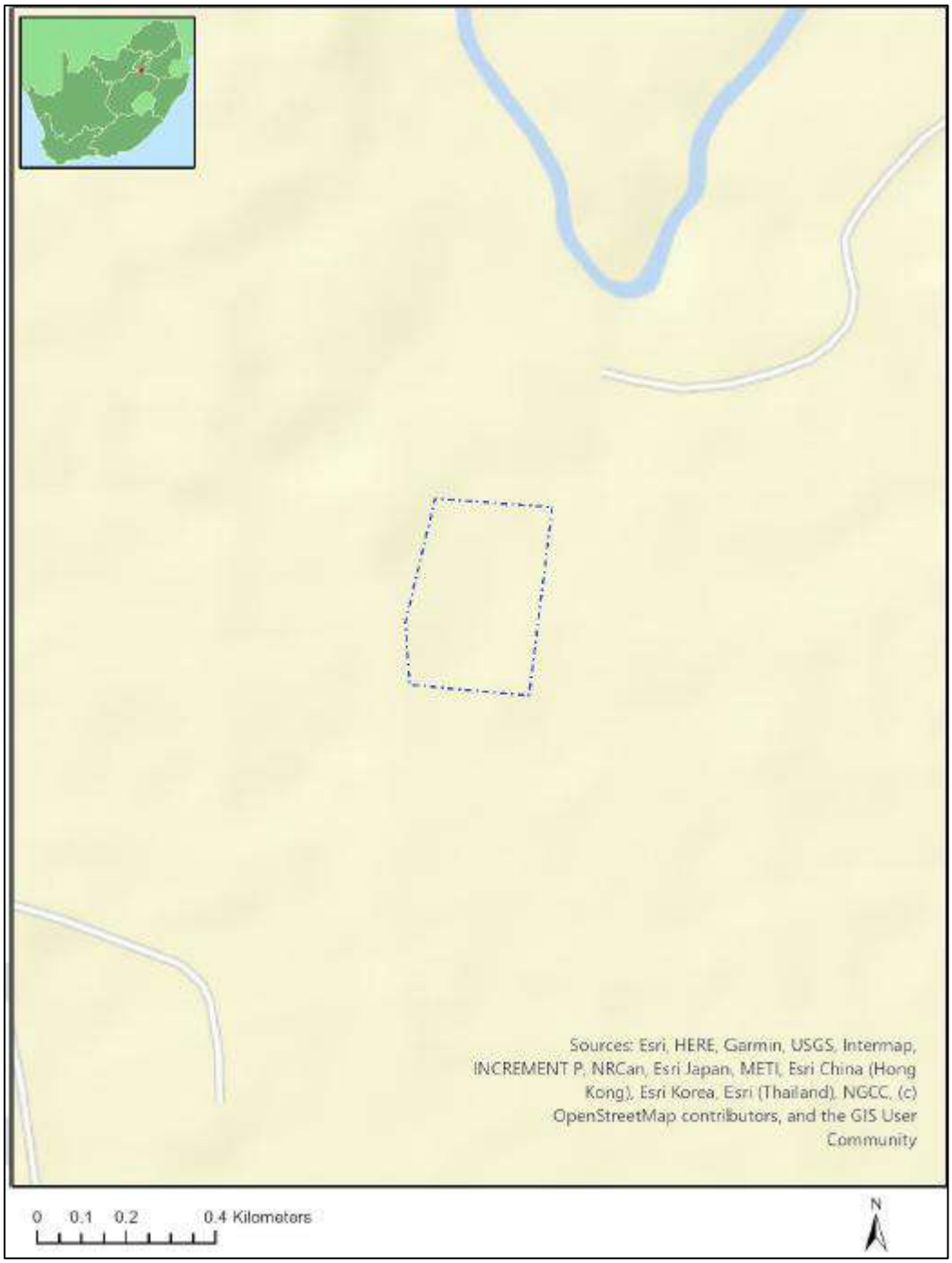


Figure 1: Screening Tool Report Orientation Map

2.1. Desktop and Specialist Analysis

Using QGIS, a map of the project area as well as the surrounding landscape was created. As can be seen on figure 2 below, the site has been previously cultivated, with no natural vegetation remaining. The proposed development footprint will not expand the already established site boundary. It can be concluded that the site has very high agricultural potential, and no red list plants are found in the development footprint. The area was also assessed by an external specialist as part of the Terrestrial Biodiversity Site Sensitivity assessment which confirms that no sensitive features were recorded, so no sensitive features / species will be affected during the proposed development. The development can be approved from an aquatic and terrestrial biodiversity perspective and also from a plant and animal species perspective.

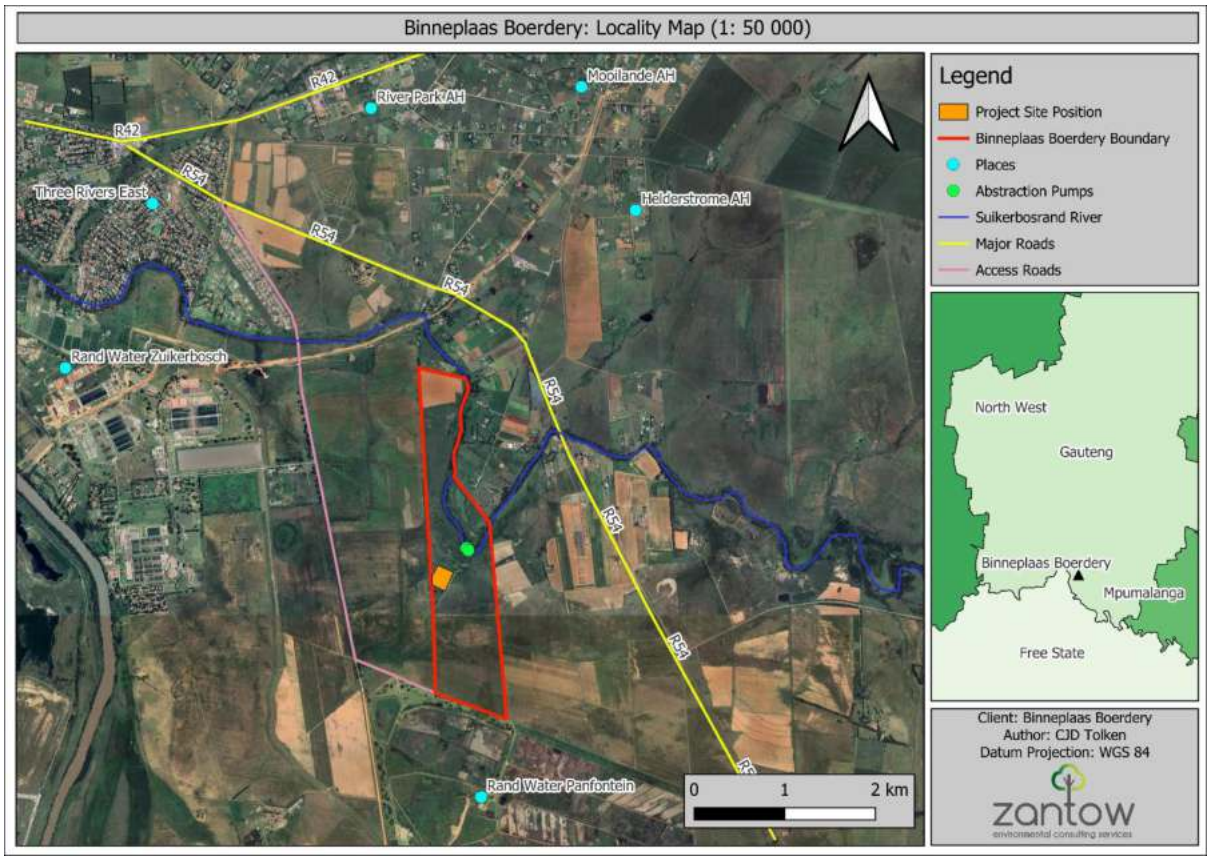


Figure 2: Locality Map

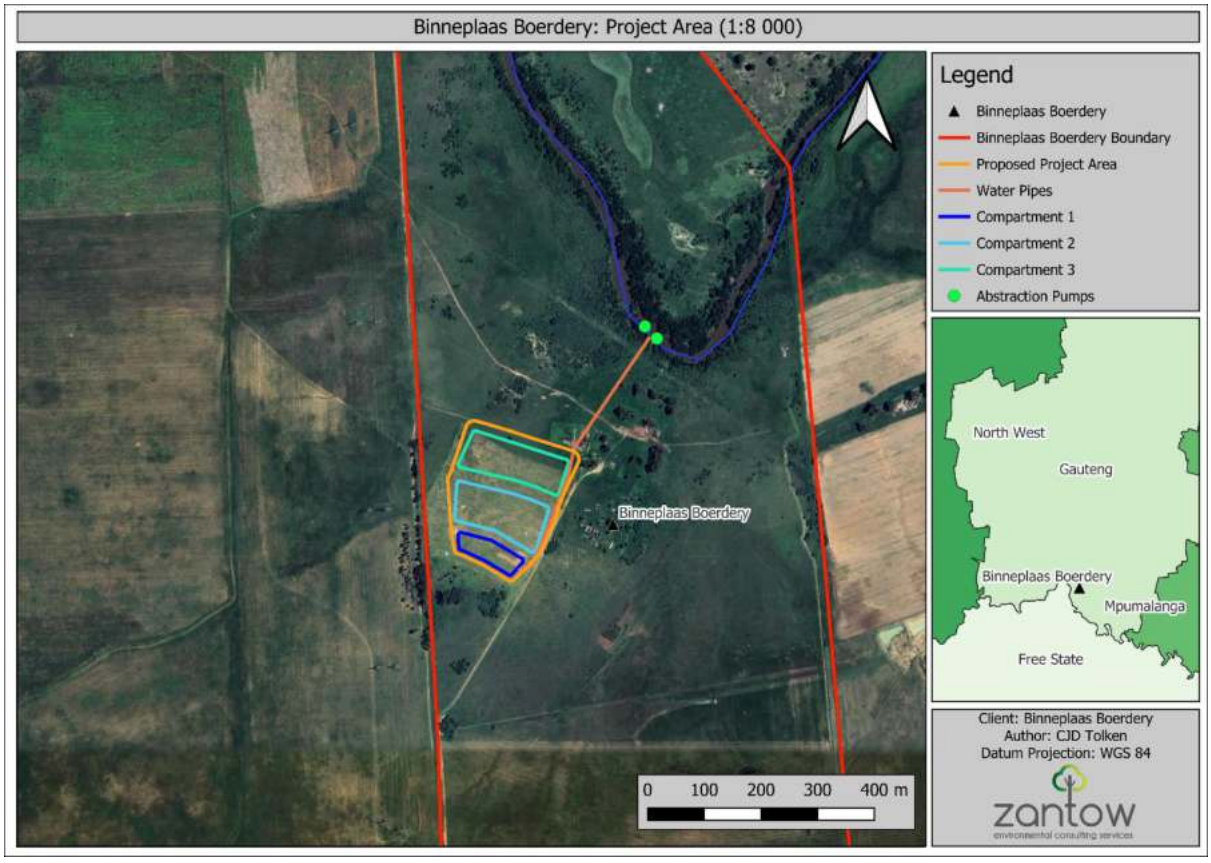


Figure 3. Project Area Map.

3. ASSESSMENT AND DISCUSSION OF SITE SENSITIVITY THEMES

The following is a description of all environmental sensitivities identified by the National Screening Tool:

3.1. Agricultural Theme

The screening tool identifies the area for the proposed development footprint with a **very high sensitivity** for the Agricultural theme (Refer to Figure 4 below). The site is zoned for agricultural use and is currently being utilized for agricultural purposes.

The site visit undertaken in January 2026 also confirmed that agricultural activities are undertaken on site.

Figure 4: Agricultural Theme Site Sensitivity

The Binneplaas Boerdery property is located on already cultivated land, with the Suikerbosrand River running through a portion of the property. The goal of the proposed project is to promote agricultural growth and sustainability by utilizing the abundant water from the Suikerbosrnad river. Water abstracted from the Suikerbosrand River will be utilized in the generation of electricity as well as the irrigation of crops. Electricity generated through the use of hydropower generators will power the abstraction pumps allowing water to flow into the balancing dams. The water will be pumped from the lowest compartment towards either the frams irrigation circles or back to the Suikerbosrand river. This will ensure a sustainable process and add great economic benefits for the Binneplaas Boerdery operations.

Current patterns of unreliability in electricity availability resulted in Binneplaas Boerdery having to rely on other means of electricity generation. This proposed project will allow Binneplaas Boerdery to

continue providing valuable agricultural resources to South Africa in a sustainable and economically efficient way.

3.2. Relative Animal Species Theme

The screening tool identifies the area as a **medium sensitivity** towards Animal species (Figure 9 below).

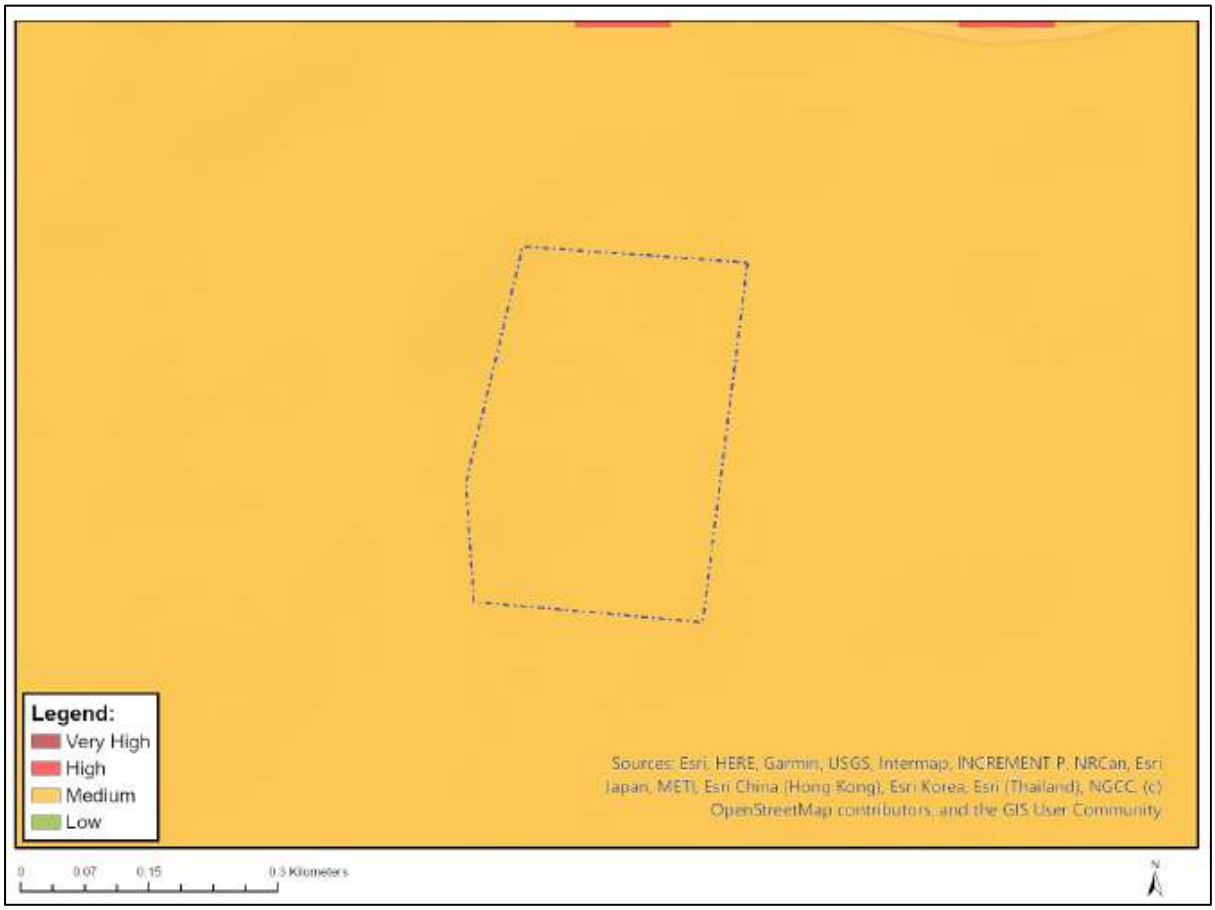


Figure 5: Animal Species Theme

The screening tool report lists the following species:

- ***Mammalia-Hydrictis maculicollis or Spotted-necked otter***
- ***Insecta- Lepidochrysops procera or The Potchefstroom blue***
- ***Insecta- Orachrysops mijburghi or Mijburgh's blue***

The *Hydrictis maculicollis* (spotted-necked otter) is a semi-aquatic mammal that is strictly dependent on permanent, unpolluted freshwater systems such as rivers and lakes, with dense riparian vegetation and a high availability of fish.

The proposed project area lacks natural water bodies or riparian habitats. The nearest significant wetland area is approximately 15 kilometers away. Given the absence of suitable aquatic and riparian conditions within the project footprint, the presence of *Hydrictis maculicollis* on site is highly improbable, and the proposed project poses no anticipated impact on this species. Furthermore, the species' habitat is not expected to be disturbed, as water is already being abstracted from the river as part of existing operations.

Figure 6: *Hydrictis maculicollis* (spotted-necked otter)

- ***Insecta- Lepidochrysops procera or The Potchefstroom blue***

Lepidochrysops procera, the Potchefstroom blue, is a butterfly of the family Lycaenidae. Endemic to the Gauteng, KwaZulu-Natal, Mpumalanga, North West and Eastern Cape provinces in South Africa, from Kokstad in the south to Komatipoort in the north-east and Potchefstroom in the west. It occurs in rocky areas in grassland (and grassy areas in savanna), where its larval host plant, *Ocimum obovatum*, occurs. The early stages are unrecorded, but the presence of the host ant (probably a *Camponotus* species) will be an additional requisite.

Presence of the Potchefstroom blue could not be verified during the site visit, however the Terrestrial Biodiversity and Wetland Impact Assessment performed by a specialist confirmed the presence of the larval host plant, *Ocimum obovatum* (Cat's Whiskers). This indicates a possibility of the Potchefstroom Blue being encountered close/on the proposed site. The area that would be utilized for the activity has already been transformed into agricultural land with a low likelihood of the larval host plant being present. The activity would have a low/negligible effect on the Potchefstroom Blue.

Figure 7: *Lepidochrysops procera* (Potchefstroom Blue)

- ***Insecta- Orachrysops mijburghi or Mijburgh's blue***

Orachrysops mijburghi, the Mijburgh's blue, is a butterfly of the family Lycaenidae. It is found in South Africa, where it is known from highland grassveld in the Free State.

Figure 8: Orachrysops mijburghi (Mijburgh's blue)

In conclusion it has been determined that although the screening tool identified a list of species potentially present on site and within the surroundings, the potential for the presence of the species to be affected by the proposed activity remains low. The disturbance of the area selected for the proposed project in association with ongoing commercial activities further reduces the potential for the occurrence of the species identified in the National Screening Tool Report.

3.3. Aquatic Biodiversity

The screening tool identifies the area as a **low sensitivity** towards aquatic species (Figure 16).

During the site visit, it was also confirmed that no aquatic species are found within a 400m vicinity of the site. In addition, water abstraction from the Suikerbosrand River, located approximately 400 m from the site, is already occurring as part of existing operations and will therefore not result in any new or significant impacts on aquatic life within the river. Abstracted water will be used for irrigation as well as the generation of electricity through the use of hydropower techniques. Water not used for irrigation will be directed back into the Suikerbosrand river. The water returning to the Suikerbosrand river will not be altered or treated in a way that would be detrimental to the state of the river.

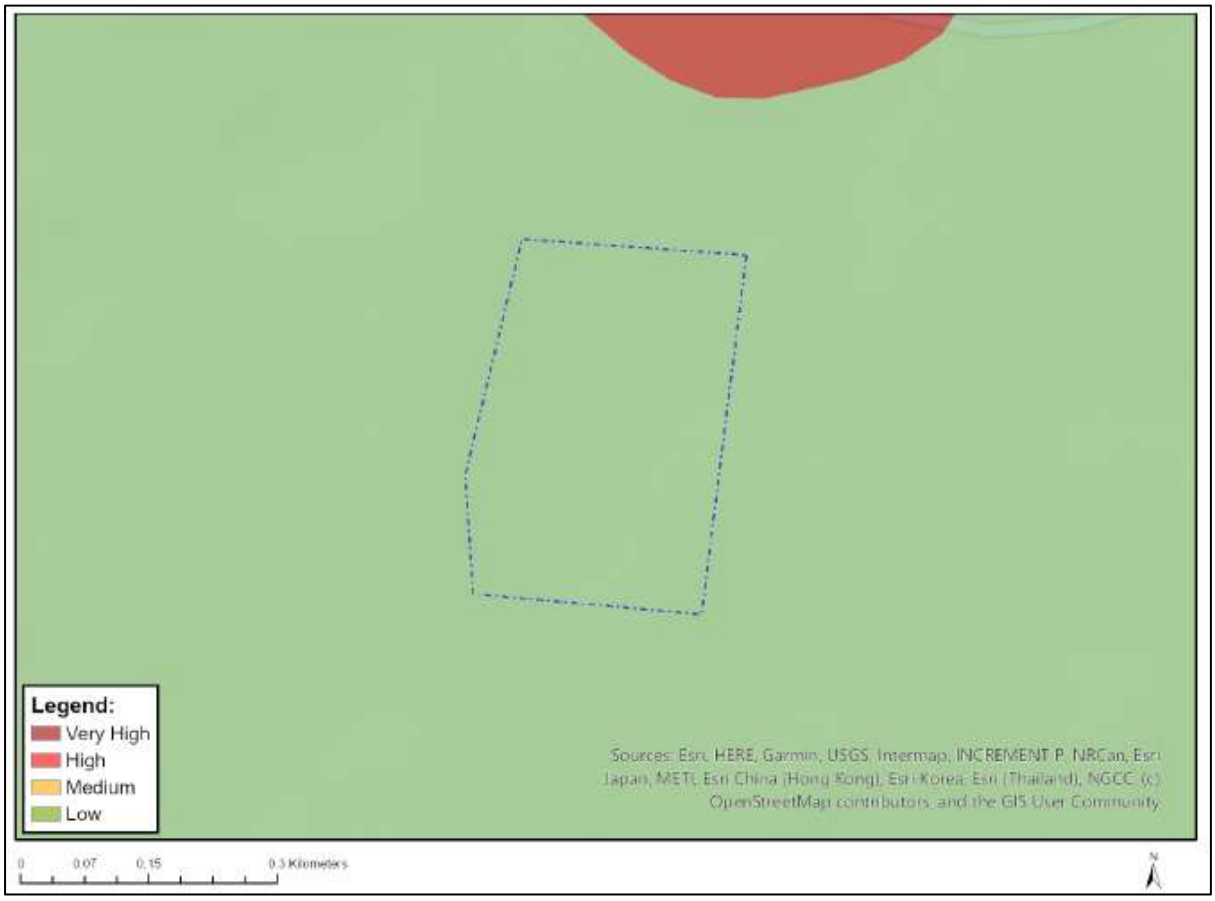


Figure 9: Aquatic Biodiversity Theme

3.4. Archaeological and Cultural Heritage Theme

The screening tool identifies the area as a **low sensitivity** towards the archaeological and cultural heritage theme.

The site visit undertaken in January 2026 also confirmed that no archaeological remains were likely to be located on the property. It has therefore been confirmed that the site and surrounding commercial property has low archaeological or cultural heritage potential. The property has already been transformed and as far as our knowledge goes, no artefacts of items of concern were discovered during construction of the warehouse.

Figure 10: Archaeological and cultural heritage theme

3.5. Civil Aviation Theme

The screening tool identifies the area as a **medium sensitivity** towards the civil aviation theme.

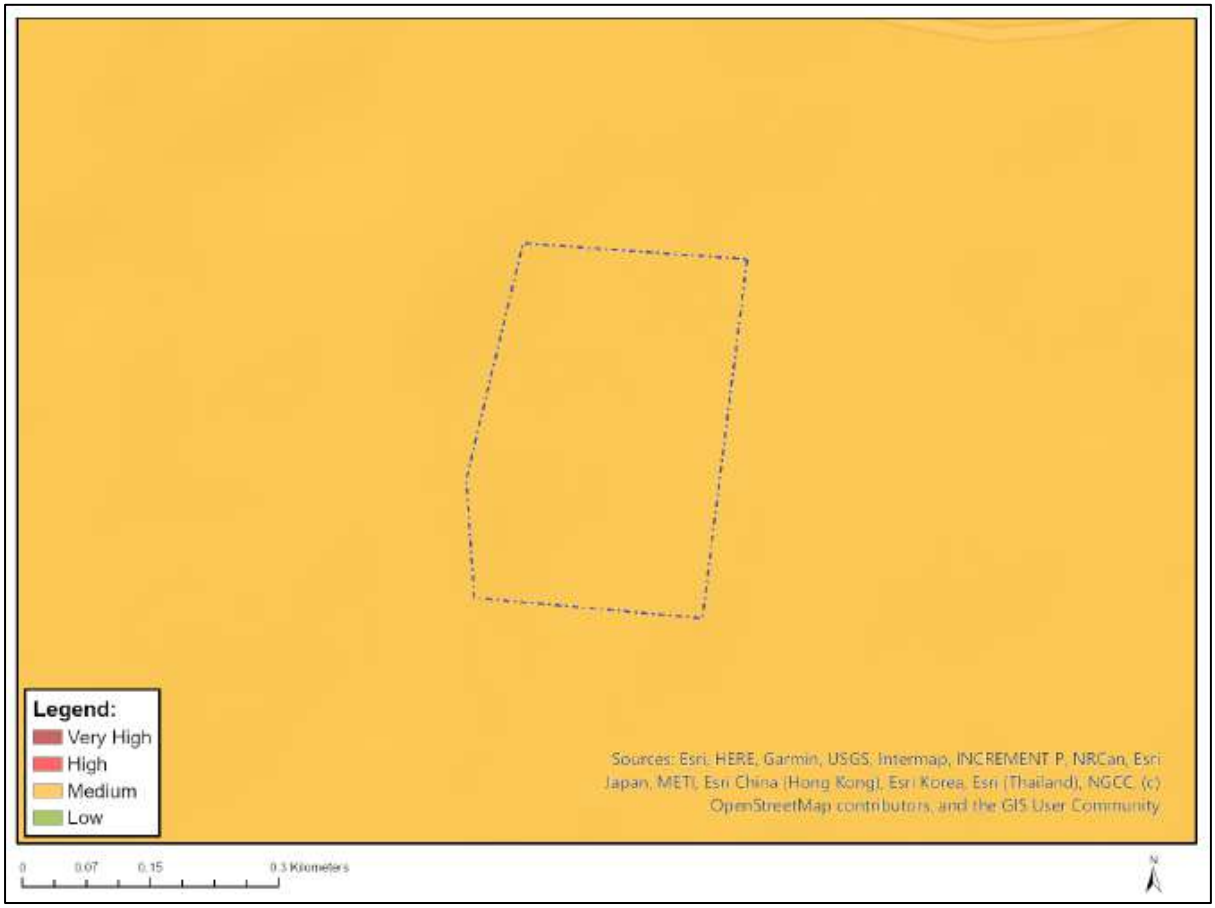


Figure 11: Civil aviation theme

The medium rating assigned by the National Screening tool has been contributed to the fact that the site is located between 8 and 15 km of other civil aviation aerodrome.

The proposed area selected for the activity will be located within the bounds of the Binneplaas Boerdery property. The proposed activity is not expected to have any direct or indirect impact on the operation or safety of any civil aviation aerodrome in the surrounding area. The activity will not produce vertical infrastructure or air pollutants caused by the activity that could compromise aviation operations or safety.

3.6. Relative Defence Theme

The screening tool identifies the area as a **low sensitivity** towards the Relative Defence theme.

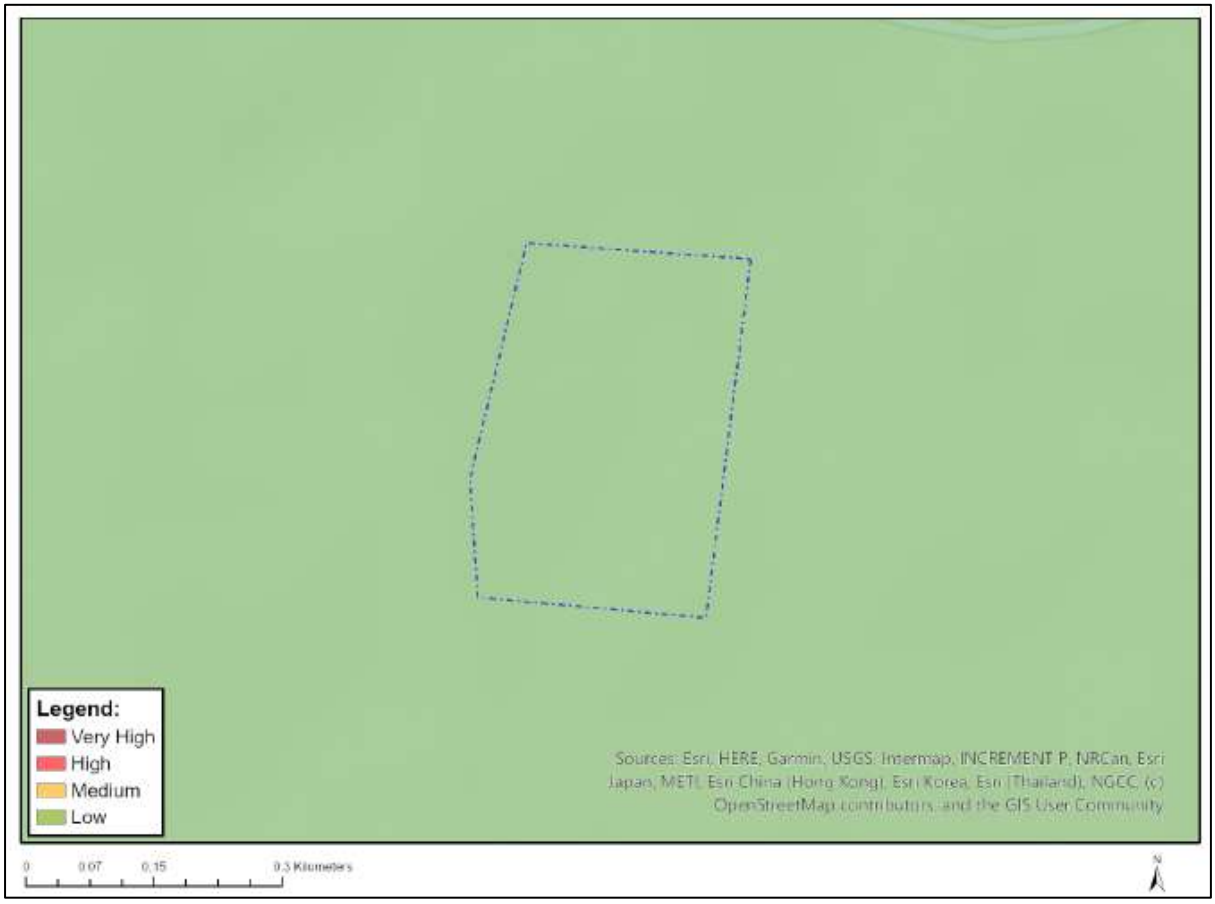


Figure 12: Relative defence theme

The proposed activity will be contained within the bounds of the Binneplaas Boerdery property, no impacts on surrounding military operations or defence sites are anticipated.

3.7. Plant Species Theme

The screening tool identifies the area as a **medium sensitivity** towards the Plant Species Theme.

During the site visit it was confirmed that the site already has no natural plant species and that agricultural cultivation has already taken place on the proposed project area. The terrestrial biodiversity assessment confirmed that no plant Species of Conservation Concern (SCC) were recorded, but there is suitable habitat for plant SCC in the riparian area.

A site inspection performed by the EAP in January 2026 confirmed that the proposed project area has been previously cultivated and that no significant plant life was visible.

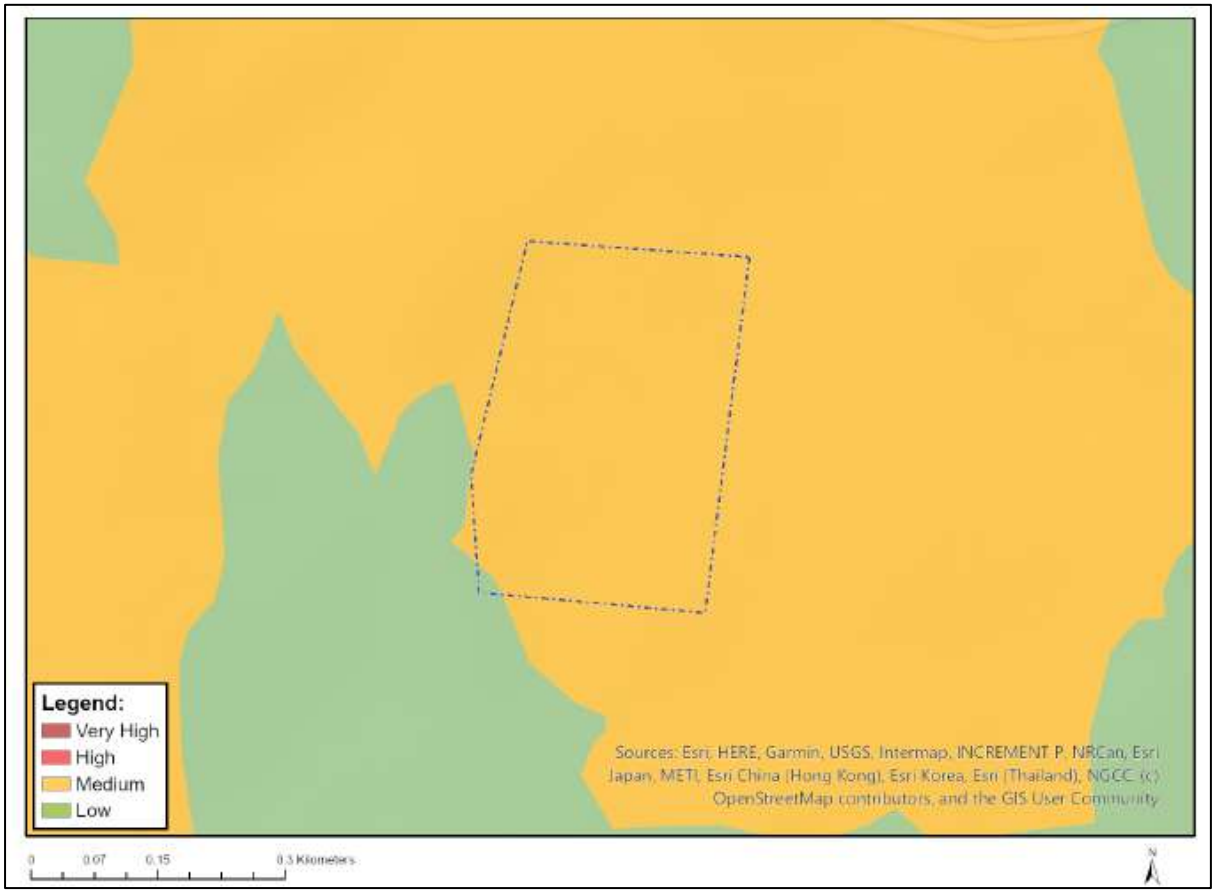


Figure 13: Plant Species Theme

3.8. Terrestrial Biodiversity Theme

The screening tool identifies the area as a **very high sensitivity** towards the Terrestrial Biodiversity Theme.

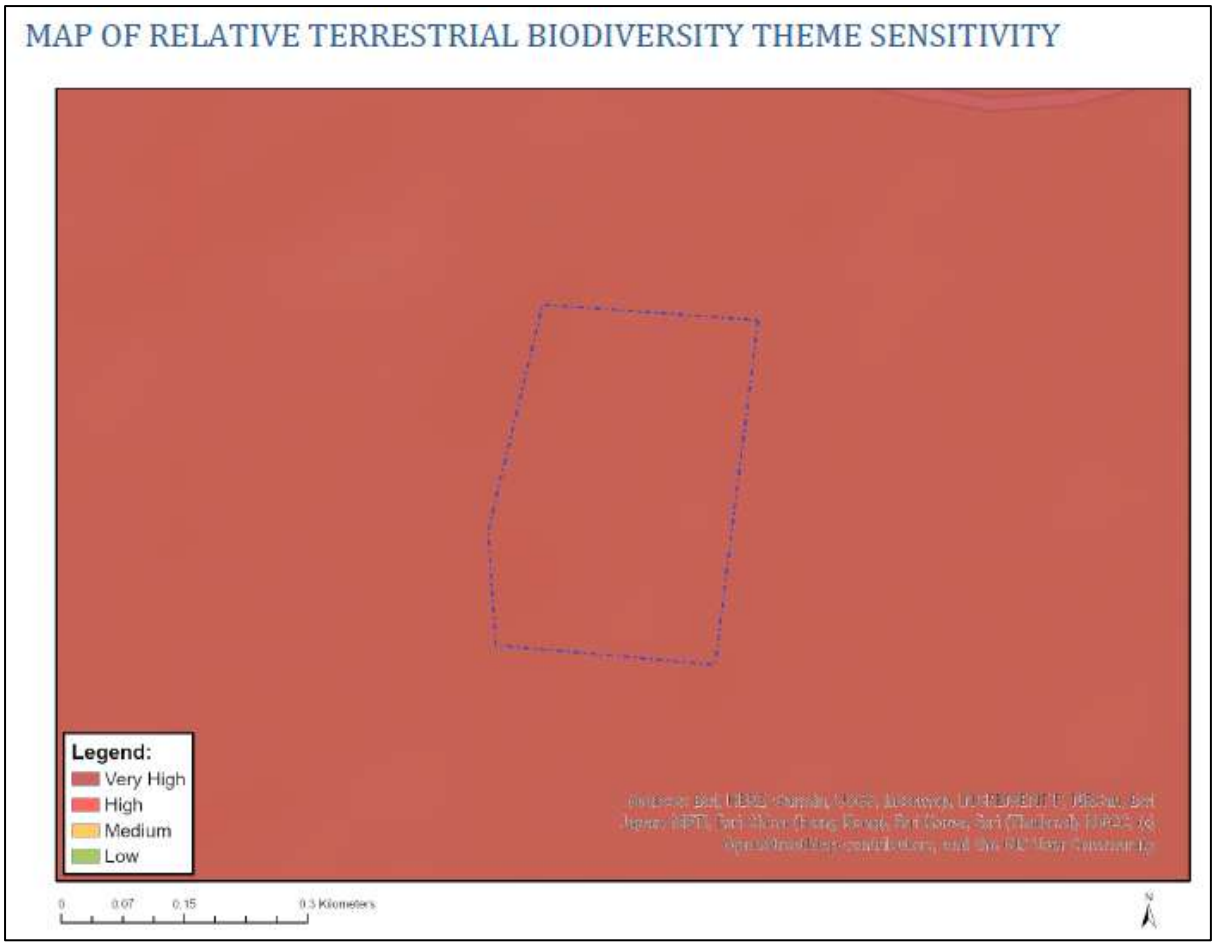


Figure 14: Terrestrial Biodiversity Sensitivity

According to the screening tool, the site has a very high sensitivity from a Terrestrial Biodiversity Theme Perspective. This is due to the fact that a small section of the project area is located in the Critically Endangered Egoli Granite Grassland.

The area was assessed by an external specialist (Excellence Ecology) as part of the Terrestrial Biodiversity Site Sensitivity assessment. The Site Sensitivity Verification proved otherwise. The Very High sensitivity is disputed as there is no natural vegetation remaining in the project area. The sensitivity is therefore low for the terrestrial biodiversity theme. The project area has already been developed as warehouse, apart from warehouse there is also loading bays, parking areas and gardens. There are no natural areas.

At the time of the site visit there was one section where grass has been sown after groundworks and compaction was completed. This section will also be used for a warehouse in the future. It does however not represent natural grassland. There are no wetlands, drainage lines, rivers or dams in the project area. There is also no habitat present for any Species of Conservation Concern.

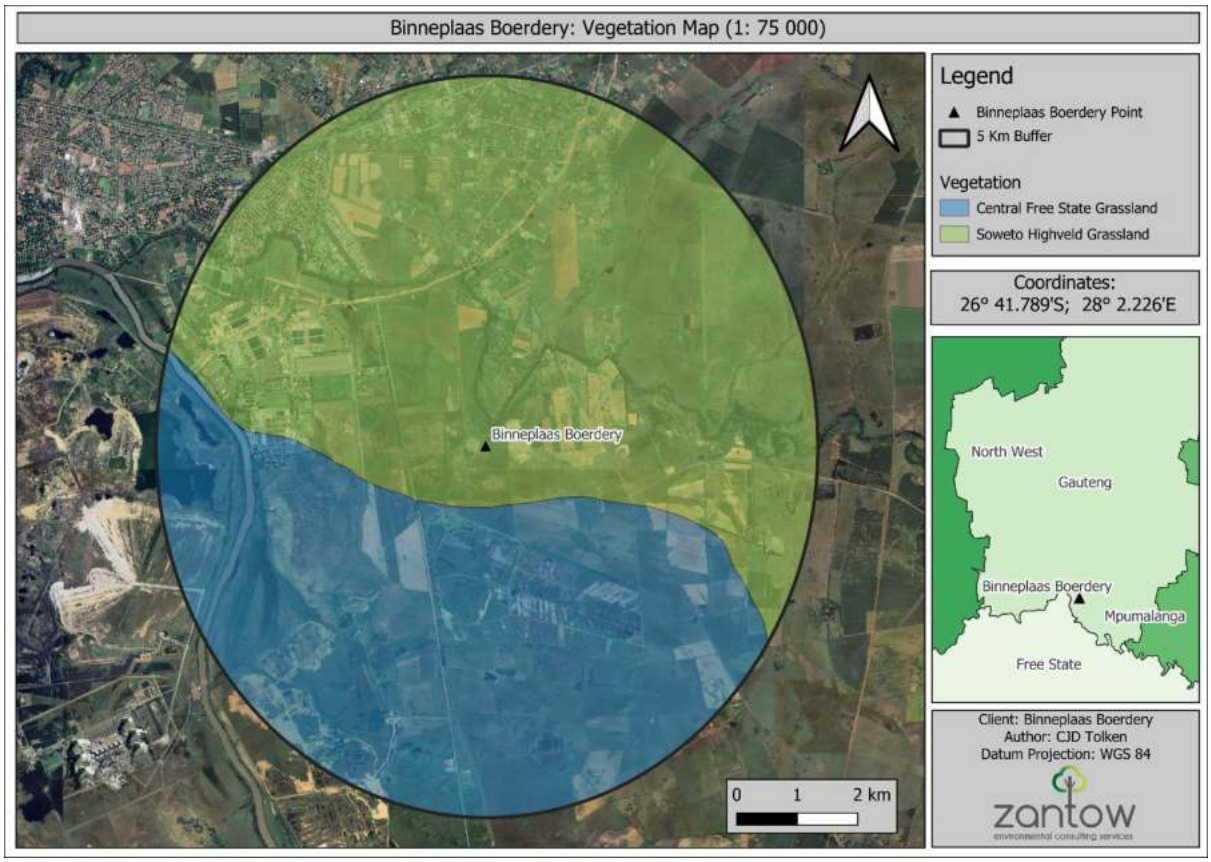


Figure 15: Vegetation Map

3.9. Paleontology Theme

The screening tool identifies the area as a **very high sensitivity** towards the Paleontology Theme.

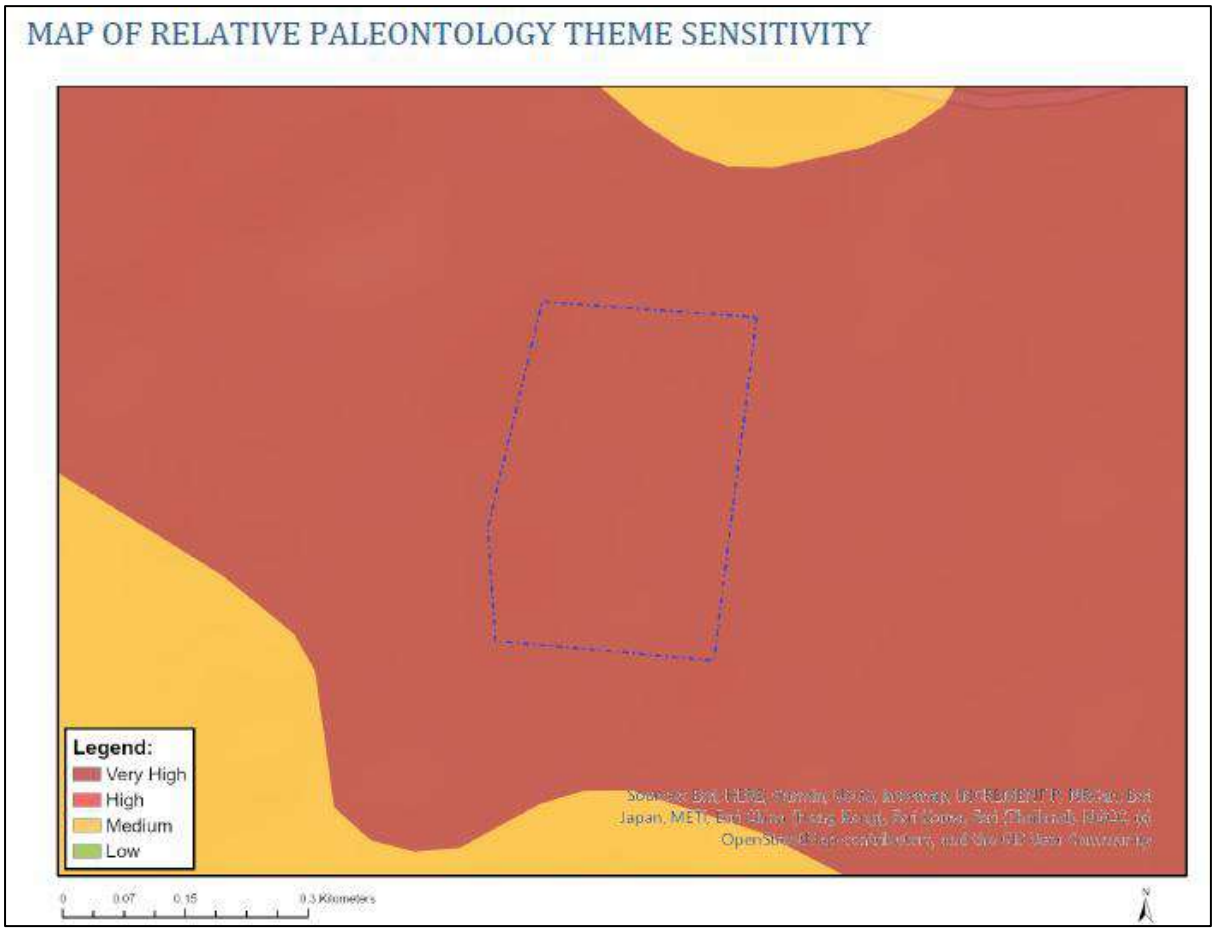


Figure 16. Paleontology Sensitivity

A compliance statement was commissioned by xxxxx. The assessment was conducted by a registered specialist, who drafted a compliance statement confirming the EAP's observations that the proposed activities will not pose a threat. The compliance statement will be attached to the Basic Assessment Report.

3.10. On-site inspection

A site visit was conducted on the 15th of January 2026. As can be seen on the photographs below, the area has grassy vegetation present and has been previously cleared and cultivated for agricultural purposes.

Photo 1: North view of the selected site

Photo 2: North-east view of the selected site

Photo 3: East view of the selected site

Photo 4: South-east view of the selected site

Photo 5: South view of the selected site

Photo 6: South-west view of the selected site

Photo 7: West view of the selected site

Photo 8: North-west view of the selected site

4. SPECIALIST ASSESSMENTS IDENTIFIED AND MOTIVATIONS

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments were identified in terms of the National Screening Tool Report and were recommended for inclusion in the assessment report.

The recommendations have been noted by the appointed EAP; however not all impact assessments are considered relevant to the proposed application.

PROPOSED SPECIALIST ASSESSMENT	VERIFICATION OF SITE SENSITIVITY AND MOTIVATION ON THE NEED FOR SPECIALIST INVESTIGATION	SPECIALIST STUDY RECOMMENDED
Agricultural Impact Assessment	The screening tool identifies the area for the proposed development footprint a very high sensitivity for the Agricultural theme. The site is however already used and zoned for agricultural use. The site visit undertaken in January 2026 also confirmed that agricultural activities are undertaken within the vicinity of the site. The proposed project would increase agricultural yield as it is directly involved with the Binneplaas Boerdery agricultural activities.	The current land use is zoned for agriculture. Binneplaas Boerdery currently operates an agricultural holding on the property It has been addressed in the Compliance Statement attached to the Draft BAR.
Terrestrial Biodiversity Impact Assessment	A Terrestrial Biodiversity Assessment was undertaken by Excellence Ecology. No animal life was noted on site during the site visit and assessment. The absence of animal life was attributed to the existing warehouse and commercial activities undertaken on site, in addition to the disturbed habitat and vegetation compositions present.	A Terrestrial Biodiversity Site Sensitivity Verification report is attached to the Draft BAR.
Animal Species Assessment	No species of conservation concern have been recorded. There is however suitable habitat for fauna SCC next to the river. The project area for the proposed construction is approximately 400m away from the potential suitable habitat. A desktop assessment, followed by a site visit was also undertaken by the EAP, which confirmed that no red data or protected species are present on site. Although the screening tool identified a list of species potentially present on site and within the surroundings, the potential for the presence is insignificant. The boundary of Binneplaas Boerdery as well as agricultural activities further reduces the potential for the occurrence of the species identified in the National Screening Tool Report.	No Animal Species Assessment will be required. A Terrestrial Biodiversity Site Sensitivity Verification report is attached to the Draft BAR.
Civil Aviation Assessment	The proposed area selected for the balancing dams is within the boundary of Binneplaas Boerdery. The project will not result in infrastructure higher than 25m and will not release any air emissions during operation. The proposed development will therefore have no impact on the operations of the existing aerodromes and airspace.	No Civil Aviation Assessment will be required. It has been addressed in the attached to the Draft BAR.
Aquatic Biodiversity Assessment	The screening tool identifies the area as a low sensitivity towards aquatic species. During the site visit, it was also confirmed that no aquatic species are found within the vicinity of the site.	No Aquatic Biodiversity Assessment will be required. It has been addressed in the Compliance Statement attached to the Draft BAR.

PROPOSED SPECIALIST ASSESSMENT	VERIFICATION OF SITE SENSITIVITY AND MOTIVATION ON THE NEED FOR SPECIALIST INVESTIGATION	SPECIALIST STUDY RECOMMENDED
Plant Species Assessment	The screening tool identifies the area as a medium sensitivity towards the Plant Species Theme. During the site visit it was confirmed that no plant Species of Conservation Concern (SCC) were recorded, but there is suitable habitat for plant SCC in the riparian area.	No Plant Species Assessment will be required. A Terrestrial Biodiversity Site Sensitivity Verification report is attached to the Draft BAR.
Defence Theme Assessment	The screening tool identifies the area as a low sensitivity towards the Relative Defence theme. The proposed project will be restricted to the within the Binneplaas Boerdery boundary, no impacts on surrounding military operations or defence sites are anticipated.	No Defence Assessment or Compliance Statement will be required.

5. OUTCOMES OF THE SITE VERIFICATION

Based on the desktop analysis and the onsite inspection, it can be concluded that the proposed development footprint does not possess all Environmental Sensitivities as identified by the Screening Tool. It is however recommended that the facility implement the measures contained in the EMPr.

Theme	DFFE Site Screening Sensitivity	Specialist Sensitivity	Rating Confirmed/ disputed	Reasons
Agriculture	Very High	Very High	Confirmed	The proposed project will be incorporated into the existing agricultural practices currently underway on the property. The activity will generate higher agricultural capability for Binneplaas Boerdery.
Animal Species	Medium	Low	Disputed	There are no species of conservation concern present within the proposed project area.
Aquatic Biodiversity	Low	Low	Confirmed	The river and riparian area have a high aquatic sensitivity, but the area where the project is proposed has a low aquatic sensitivity as there are no wetland features.
Archaeological and Cultural Heritage	Low	Low	Confirmed	Activity poses no risk to disturbance of any heritage impacts
Civil Aviation	Medium	Low	Disputed	No structures that will impact the civil and aerospace. No radio frequency risks.
Defence	Low	Low	Confirmed	No risk for any defence impact.
Plant Species	Medium	Low	Disputed	No plant Species of Conservation Concern (SCC) were recorded, but there is suitable habitat for plant SCC in the riparian area.
Paleontology	Very High	Low	Disputed	No fossil material is expected from the project area. Should a chance find occur, the construction phase will be halted, and the chance find procedure followed accordingly.
Terrestrial Biodiversity	Very High	Low	Disputed	The area where the dam is proposed is disturbed by historical crop production and therefore has a low sensitivity. The extraction point also has a low sensitivity, as it is disturbed.

ANNEXURE A

SPECIALIST CV

zantow
environmental consulting services

KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University

Appendix I-3

Timeframe Expansion

Gauteng Department of Environment
Umnotho House
56 Eloff Street
Johannesburg
2001

Attention: Mr Bongani Shabangu
Email: Bongani.Shabangu@gauteng.gov.za

Dear Sir,

REQUEST FOR EXTENSION OF TIMEFRAME IN TERMS OF REGULATION 3(7) OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014

Application Reference: Gaut: 002/26-27/E0011

Project: Application for Environmental Authorisation for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land Adjacent to the Suikerbosrand River

Applicant: Binneplaas Boerdery

Zantow Environmental Consulting Services CC, acting as the appointed Environmental Assessment Practitioner for the above-mentioned application, hereby respectfully requests an extension of the prescribed timeframe for the submission of the Basic Assessment Report and supporting documentation.

The Department acknowledged receipt of the application on 13 April 2026, with amendments received on 17 April 2026. The Department's acknowledgement letter further records that the application may lapse should any prescribed timeframe not be met, unless an extension is granted in terms of Regulation 3(7) of the Environmental Impact Assessment Regulations, 2014.

The Draft Basic Assessment Report process has progressed; however, the finalisation of the report was delayed due to the timing and availability of certain specialist inputs and the need to ensure that all relevant information is properly incorporated into the assessment and supporting documentation. Additional time is required to ensure that the specialist findings, public participation comments, responses to comments, and final reporting are appropriately consolidated prior to submission to the Department.

The request is made proactively and prior to any potential lapsing of the application, to ensure continued procedural compliance and to avoid prejudice to the applicant, interested and affected parties, and the competent authority's consideration of the application. No activity requiring environmental authorisation has commenced.

In light of the above, we respectfully request that the Department grant an extension of fifty (50) days, or such other period as the Department may deem appropriate, in terms of Regulation 3(7) of the Environmental Impact Assessment Regulations, 2014.

We trust that the above is in order and respectfully request written confirmation of the extension granted. Please do not hesitate to contact the undersigned should any further information be required.

Yours faithfully,
Kind regards

Karien Zantow
Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871
T: 083 3843 641 F: 016 932 4976
E: karien@zantow.co.za
www.zantow.co.za

GAUTENG PROVINCE
ENVIRONMENT
REPUBLIC OF SOUTH AFRICA

Reference: **Gaut002/26-27/E0011**
Enquiries: Wesi Moagi
Telephone: 011 240 3378
E-mail: Wesi.Moagi@gauteng.gov.za

Zantow Environmental Consulting Services cc
Email: Karien@zantow.co.za

Dear Sir/ Madam

NOTIFICATION FOR EXTENSION OF TIME TO SUBMIT FINAL BAR: THE PROPOSED DEVELOPMENT OF CASCADING OFF-CHANNEL BALANCING DAMS, RIVER ABSTRACTION INFRASTRUCTURE AND HYDROPOWER-ASSISTED IRRIGATION SYSTEM ON AGRICULTURAL LAND ADJACENT TO THE SUIKERBOSRAND RIVER

We acknowledge having received the above-mentioned notification for environmental authorisation on 16/06/2026.

Your notification for an extension of time to submit the Final BAR has been acknowledged. Thus, you have until 08/09/2026 to submit Final BAR in terms of Regulation 19(1)(b) of the National Environmental Management Act, 2014.

Please draw the applicant's attention to the fact that the activity may not commence prior to a decision being issued by the Department.

Yours faithfully

Miranda Mhlongo
Designation: Acting Deputy Director: Strategic Administration Support
Date: ***25 June 2026***

CC: Binneplaas Boerdery
Attn: Frik Roets
Email: frikroets@vodamail.co.za

Appendix J

Amended Application Form

GAUTENG PROVINCE
ENVIRONMENT
REPUBLIC OF SOUTH AFRICA

Application Form for Environmental Authorisation in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014 (2025 Version 1)

	For official use only
NEAS Reference Number:	
Provincial Reference Number:	
Date Received:	

Kindly note that:

1. This application form is current as of April 2025. It is the applicant's responsibility to check for any updated versions published by the competent authority.

2. If you also need to apply for a Waste Management License under the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) or an Atmospheric Emission License under the National Environmental: Air Quality Act, 2004 (Act No. 39 of 2004), separate application forms for each applicable legislation must be submitted simultaneously to the relevant licensing authorities. However, a single EIA process must be followed. Attach copies of these applications to this form. If an Integrated Authorisation is intended, seek guidance from the competent authority before starting the EIA process.

3. Type within the spaces provided. The space size does not necessarily reflect the amount of information needed, as the table will automatically expand as you type.

4. Use “not applicable” carefully, as it may result in refusal if it pertains to material information required for assessing the application.

5. The complete application form must be submitted through the EIA online system, either before or alongside the Basic Assessment Report or the Scoping and Environmental Impact Report. Access the system at https://eia.gauteng.gov.za.

6. All application forms must be signed and bear the Commissioner of Oaths’ official stamp as required. Unsigned or improperly completed applications will not be considered.

7. **Please attach a valid EAPASA registration certificate to the application form.**

8. Ensure all relevant sections of the form are filled in. Incomplete applications will not be processed and missing information will be communicated within 10 days of receipt.

9. Proof of payment must accompany this application. The application will not be processed without proof of payment unless one of the exclusions provided for in the Fee Regulations, 2014 is applicable.

10. A revised application has to be accompanied by a formal letter indicating all the changes made to the application. A revised application should be signed a new and recommissioned.
11. Draft Reports (BAR, Scoping Report, and EIR) for public comment must be uploaded to the EIA online system during the public participation process.

12. According to Regulation 45 of the EIA Regulations 2014, this application will lapse if prescribed timeframes are not met, unless an extension is granted under regulations 3 (7), 19 (1, b), or 23 (1, b).

13. Unless legally protected, all information submitted in this application will become public upon receipt. Information must be provided to interested and affected parties upon request at any stage of the application process.

14. Environmental data collected during the assessment process, including spatial and species data, must be uploaded to the EIA online system. All environmental data must be submitted electronically to the department. Spatial data should be provided as zipped shapefiles in WGS 84 projection, accompanied by an explanatory document or metadata. Other environmental data should be submitted in spreadsheet format, clearly linked to the corresponding spatial data. The data should be zipped and emailed to environmentdata@gauteng.gov.za. The shapefiles must be labelled / named using the registration number given and the type of data for the application (e.g. "e.g. "GAUT_0022_25_26_E0001_project title" with no spaces).

15. **Please note that your submission will be acknowledged within 10 days of receipt. If you do not receive an acknowledgement from the Department within this period, kindly follow up using our central email address: environmentenquiries@gauteng.gov.za**

1. DEPARTMENTAL DETAILS

Postal Address
Gauteng Department of Environment
Attention: Ms. Miranda Mhlongo, Acting Deputy Director: Environmental Support Services
P. O. Box 8769
Johannesburg
2000
Physical Address
Environmental Support Services of the Environmental Branch
Ground floor, Umnotho House, 56 Eloff Street
Johannesburg

Queries should be directed to the Environmental Support Services at:
Departmental central telephone number: (011) 240 2500
Email: ENVIRONMENTSUE@gauteng.gov.za or environmentenquiries@gauteng.gov.za

View the Department's website at http:// www.gauteng.gov.za for the latest version of the documents

Proof of payment must accompany this application. The application will not be processed without proof of payment unless one of the exclusions provided for in the fee Regulations is applicable **AND** such information in the exclusion section of this application form has been confirmed by this Department.

2. FEES

Gauteng Department of Environment's details for the payment of application fees

The following should be noted by all clients:
An application must be submitted within 90 days after a deposit was made for such application.

A reference number must be obtained from the Department before a payment is processed and must be recorded on the deposit as the client's deposit reference. No deposit may be made without the reference provided by the Department.

No refunds will be made by the Department if an application is not submitted within the 90 days as indicated.

No Cash deposits will be accepted. Only EFT, Bank and Speed Point payments will be accepted.

No application will be processed if confirmation of payment wasn't made by the Department.

Payment Enquiries:
Contact person: Miranda Mhlongo
Email: ENVIRONMENTSUE@gauteng.gov.za or environmentenquiries@gauteng.gov.za

Department Banking details:

Bank Name:	Standard Bank South Africa (SBSA)
Account Name:	GPG ENVIRONMENT SUPP ACC
Type of Account:	Business Current Account
Account Number:	30 230 638 2
Branch Name:	No 5 Simmonds
Branch Code:	00 5055

Reference number: Project Reference Number (to be obtained from the Department) followed by 4 Xs e.g. GAUT00222526E0001XXXX (**please note that this bank account has a transaction rule with a 20 alpha/numeric reference, filled with X, quote this reference number when making payment**)

Application form to be submitted with proof of payment attached- **Annexure 1**

Tax exemption status:
Status: Tax Exempted

EXCLUSIONS

An applicant is excluded from paying fees if:

- The activity is a community-based project funded by a government grant; or
- The applicant is an organ of state.

Applicants are required to tick the appropriate box below to indicate that either proof of payment is attached or that, in the applicant's view, exclusion applies. Proof and a motivation for exclusions must be attached to this application form as **Annexure 2.**

Proof attached [x]

Exclusion applies [ ]

TYPE OF EXCLUSION	Tick where applicable. Proper motivation must be attached to the application
The activity is a community based project funded by a government grant	
The applicant is an organ of state	

FEE AMOUNT

Application	Fee
Applications for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations	**R2 000**
Application for an environmental authorisation, for which S&EIR is required in terms of the Environmental Impact Assessment Regulations	**R10 000**

Applications dealt with in terms of section 24L of the Act (where an environmental authorisation is required in terms of NEMA and a waste management license is required in terms of NEMWA and the same competent authority is dealing with both these applications)	**100% of the most expensive application, namely, R10 000 (Ten Thousand Rand) if S&EIR is triggered and R2 000 (Two Thousand Rand) if the basic assessment is triggered;** **(b) 50% of the other application, namely, R5 000-00 (Five Thousand Rand) if the S&EIR is triggered or R1 000 (One Thousand Rand) if the basic assessment is triggered.**

1. BACKGROUND INFORMATION

Project applicant Details

Project applicant:	Binneplaas Boerdery		
Trading name (if any):	Binneplaas Boerdery		
Responsible position, e.g. Director, CEO, etc.:			
Contact person:	Mr. Frik Roets		
Postal address:	Posbus 263029		
Postal code:	Drie Riviere	Cell:	082 977 1128
Telephone:	0829771128	Fax:	n/a
E-mail:	frikroets@vodamail.co.za		

Please duplicate the above section in instances where there is more than one applicant.

Local Municipality Details

Local municipality	Midvaal Local Municipality		
Contact person:	Mr J Verster		
Postal address:	PO Box 9, Meyerton		
Postal code:	1961	Cell:	
Telephone:	016 360 5860	Fax:	016 590 1008
E-mail:	jakov@midvaal.gov.za		

Please duplicate the above section in instances where there is more than one Municipality.

Land Owner Details

Land owner:	As above		
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

Please duplicate the above section in instances where there is more than one landowner. **The consent use form in Addendum 1 must be filled if the applicant is not a landowner or person in control of the land where the**

development will / is taking place. Further, the above section must be duplicated in instances where there is more than one landowner.

Environmental Assessment Practitioner (EAP) Details

Company of Environmental Assessment Practitioner:	Zantow Environmental Consulting Services cc		
EAP name / Contact person:	Karien Zantow		
Postal address:	P.O Box 3858 Vanderbijlpark		
Postal code:	1900	**Cell:**	083 384 3641
Telephone:	N/A		
E-mail:	karien@zantow.co.za		
EAP Qualifications	BSc (Hons) Environmental Engineering		
EAP Registration / Associations (Registration No. & Certificate)	EAPASA and SACNASP		
EAPASA Ref number:	2019/1871		
EAPASA Registration:	Effective Date:1 April 2026	Expiry Date: 31 March 2027	

2. PROJECT INFORMATION

Project Title

Application for an Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land adjacent to the Suikerbosrand River.

Scope of the Activity

The proposed project entails the development of an integrated water abstraction, storage, energy recovery, and irrigation system on agricultural land located adjacent to the Suikerbosrand River. The system combines river abstraction, cascading off-channel balancing dams, gravity-driven flow, and hydropower-assisted pumping to enhance irrigation efficiency and long-term water security. The primary objective of the project is to enhance on-farm water security and irrigation efficiency through the construction of three cascading earth dams positioned along a natural slope on the property.

Water will be abstracted from the Suikerbosrand River and pumped to the uppermost dam via a primary abstraction pump system. From this highest elevation storage point, water will be released in a controlled manner to flow sequentially through the second and third (lower) dams. The cascading configuration is designed to utilize gravitational flow and hydraulic head between the dams.

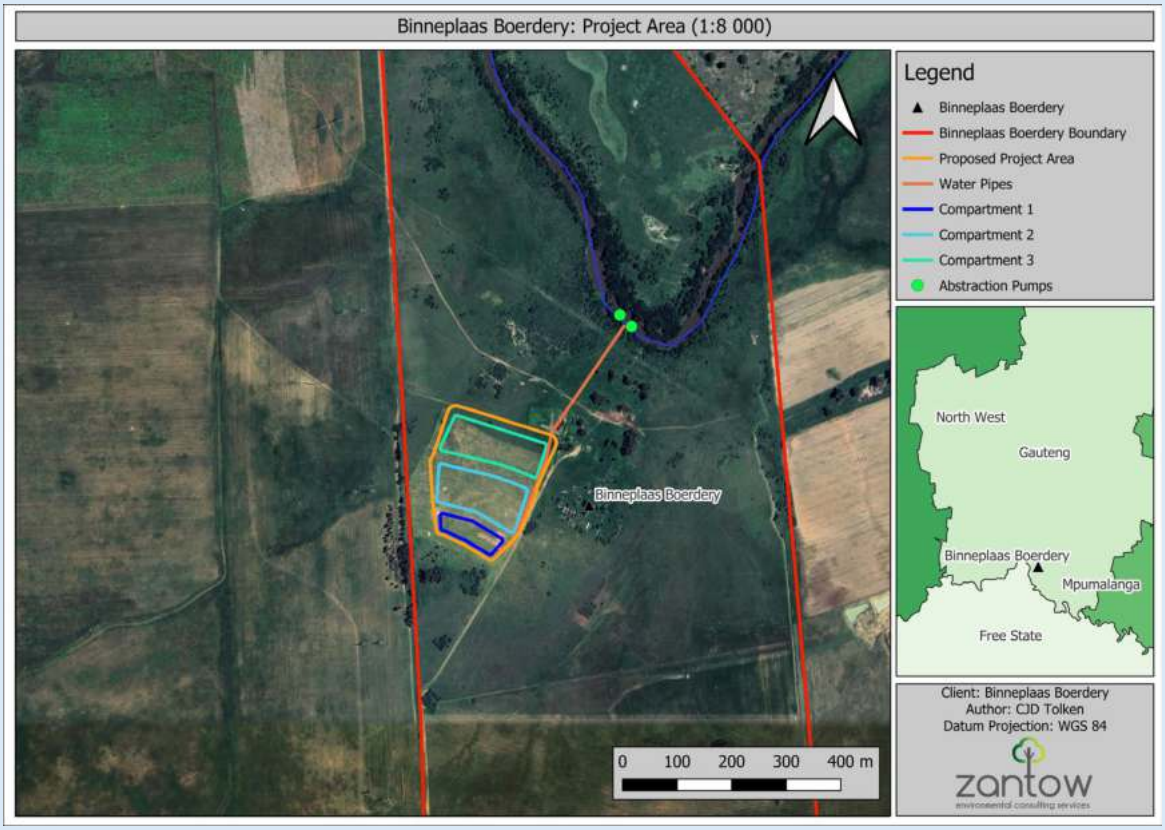
As water flows from the upper dam to the lower dams, the system will incorporate in-line hydropower-assisted pumping

technology (e.g., hydraulic ram pumps or micro-hydro driven pumps). These pumps are designed to harness the kinetic and potential energy generated by the moving water to produce mechanical and/or electrical energy. This recovered energy will be used to partially or fully power the pump systems, thereby reducing reliance on external electricity or fuel-driven pumping.

One of the hydropower-assisted pumps will be configured to abstract stored water from the cascading dam system and convey it via pipeline infrastructure to newly developed irrigation fields on the farm. The irrigation component will support expanded crop production and improved agricultural yield, while optimizing water reuse within the closed storage network.

Key infrastructure components of the project will include:

- River abstraction works and intake structure
- Rising main pipeline to the upper dam
- Three engineered cascading dams with spillways and control structures
- Gravity transfer channels/pipelines between dams
- Hydropower-assisted pump units (self-powered from water flow)
- Irrigation pump station and distribution pipelines
- Energy control and water flow regulation mechanisms



The overall design promotes sustainable water management by integrating water storage, gravity conveyance, and renewable energy recovery. By utilizing the natural topography and hydraulic energy within the system, the project aims to reduce operational energy costs, improve irrigation reliability, and enhance long-term agricultural productivity.

The process flow is as follows:

Water Abstraction and Conveyance

Water will be abstracted from the Suikerbosrand River via an existing river intake structure and pumped through a rising main pipeline to the uppermost balancing dam. The abstraction and transfer infrastructure will be designed to comply with applicable water use authorisations and operational control requirements.

Cascading Dam Storage System

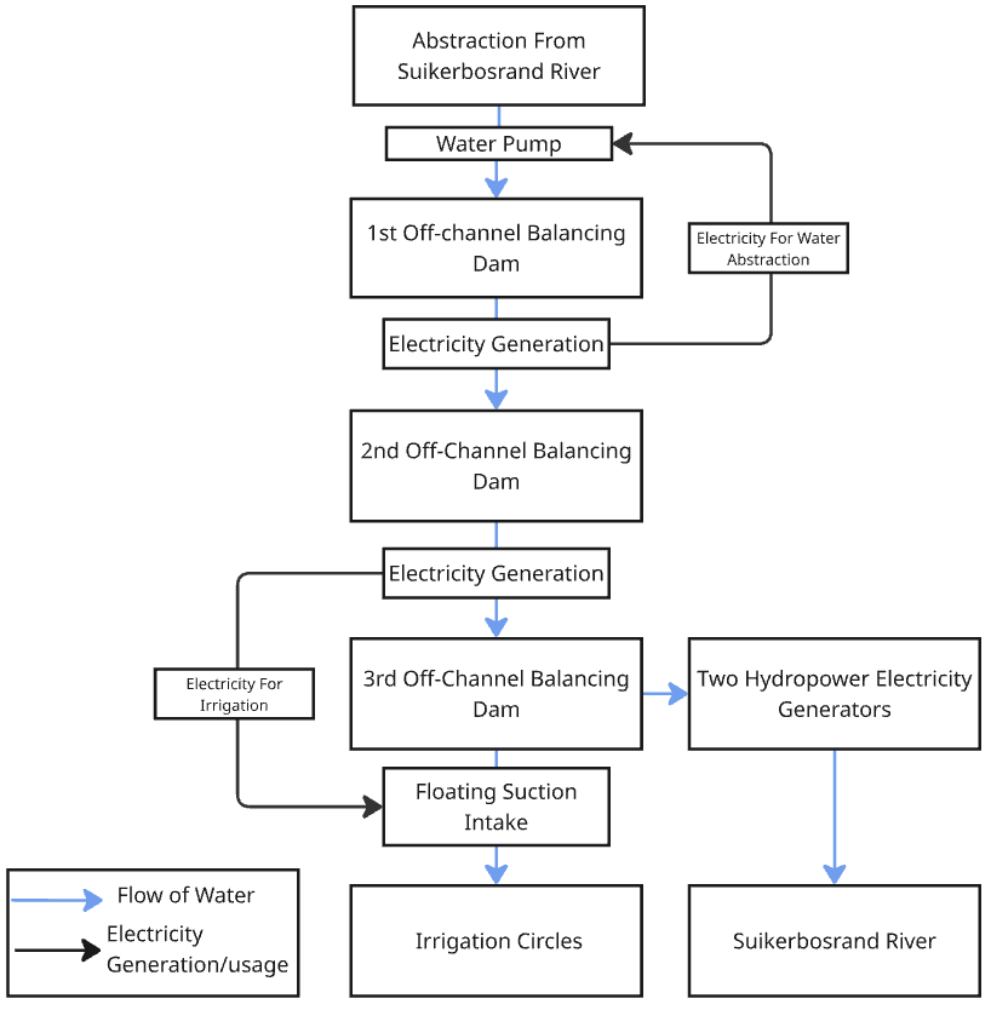
The storage component of the project will consist of three engineered off-channel balancing dams constructed in a cascading configuration along the natural slope of the property. The dams will be interconnected to allow controlled gravity flow from the highest elevation storage point to the lowest.

The balancing dam system will comprise three compartments designed to optimise storage while limiting structural wall heights in accordance with safety and topographical constraints.

Combined system capacity and footprint:

- Total gross storage capacity: ±107 976 m³
- Combined water surface area: ±27 618 m²
- Total footprint area: ±3.2 ha

The dams will be located outside the 1:100-year floodline and ecological buffer zones to minimise environmental risk.



Dam Engineering Design Features

Dam Type and Construction

Each dam will be constructed as a lined, homogeneous earthfill embankment structure using suitable site-won materials, subject to geotechnical suitability testing.

Key construction elements include:

- Cleared and grubbed dam footprints
- Excavated basins shaped to design profiles
- Engineered embankments with controlled compaction
- Key trench foundations beneath embankment walls
- Crest widths of approximately 4 m

- Embankment slopes of 1(V):2.5(H) upstream and downstream

Embankment fill will be compacted to a minimum of 95% Standard Proctor density at specified moisture conditions.

Lining System

To prevent seepage losses and improve storage efficiency, all dams will be fitted with a **1.5 mm HDPE geomembrane liner system** installed on prepared internal slopes and basin floors. The liner will be anchored into crest trenches and installed in accordance with recognised geomembrane standards and supplier specifications.

Spillway and Hydraulic Control Infrastructure

Each dam compartment will include engineered emergency spillway structures constructed as HDPE-lined chutes with gabion sidewall protection to safely convey overtopping flows. Interlinking spillways between compartments will regulate cascade flow and prevent overtopping or embankment failure during extreme inflow or operational malfunction scenarios.

Energy Recovery and Self-Powered Pumping

The cascading configuration creates hydraulic head and flow velocity as water moves from the upper to lower dams. This hydraulic energy will be harnessed through the installation of hydropower-assisted pumping technology, such as:

- Hydraulic ram pumps, and/or
- Inline micro-hydro turbine pumps

These systems generate mechanical and/or electrical power from flowing water, enabling partial or full self-powering of pump operations without reliance on grid electricity.

Recovered energy will be used to:

- Support abstraction pumping efficiency
- Power internal transfer pumps where required
- Reduce operational energy costs

Irrigation Abstraction and Distribution

Water required for agricultural irrigation will be abstracted primarily from the lowest dam (Compartment 3) via:

- A 315 mm HDPE outlet pipeline
- Floating suction intake mounted on a pontoon structure

The floating intake ensures abstraction from optimal water levels while avoiding sediment entrainment. Water will then be pumped through a dedicated irrigation pipeline network to supply newly developed crop irrigation areas on the farm.

Geotechnical and Foundation Considerations

A site geotechnical investigation comprising trial pits and laboratory testing confirmed the presence of suitable clayey sand

and weathered sandstone materials for embankment construction. No shallow groundwater table was encountered, and no subsoil drainage system was deemed necessary at design stage.

Environmental and Regulatory Context

The balancing dams are classified as off-channel storage systems supplied via pumped abstraction. Regulatory approvals required include:

- Water Use Licence (National Water Act) (Will run concurrently with this application)
- Environmental Authorisation (NEMA) (This process)

Application Process Followed

(BA OR Scoping & EIA)	BA

Is the National Screening Report Attached? (Note: it is compulsory that the screening report be attached)

YES	**x**	**NO**	

Other Authorisations Required

LEGISLATION	**AUTHORISATION REQUIRED**		**APPLICATION SUBMITTED**	
SEMAs	YES	NO	YES	NO
National Environmental Management: Air Quality Act		**X**		
National Environmental Management: Biodiversity Act		**X**		
National Environmental Management: Integrated Coastal Management Act		**X**		
National Environmental Management: Protected Areas Act		**X**		
National Environmental Management: Waste Act		**X**		
National legislation	**X**			
Mineral Petroleum Development Resources Act		**X**		
National Water Act	**X**			
National Heritage Resources Act		**X**		
Others: Please specify		**X**		

Please provide proof of any authorisations obtained in terms of the above as **Annexure 6**.

Property Description

Description of the property/properties where activity is proposed to be undertaken:	Portion 9 of Erf 434, Uitvlugt Farm

Farm/ Erf name(s) & number(s) (including portion/ holding) of all proposed sites:	Portion 9 of Erf 434		
Property size(s)(ha) of all proposed sites	221 ha		
Property size(s) (m^2) of all proposed sites:	2 208 000 m^2		
Development footprint size(s) in ha/m^2:	3.2 ha		
SG Digit code(s) of all proposed sites:	T0IR00000000043400009		
Coordinates of all proposed sites: Latitude (S)	26°	41‘	47.52“
Longitude (E)	28°	2‘	15.00“

Note: Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate system**.** Where numerous properties/sites are involved (e.g. linear activities), please attach a list of property descriptions separately.

Physical/Street address of proposed sites:	Portion 9 of Erf 434, Uitvlugt Farm
Current Zoning of site(s)	Agricultural

Orientation Maps

Locality map:	A locality map must be attached to the application form as **Annexure 3**, as an Appendix. The scale of the locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map. The map must include the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • the prevailing wind direction; and • GPS co-ordinates (Indicate the position of the proposed activity with the latitude and longitude at the centre point for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should be to at least three decimal places. The projection that must be used in all cases is the WGS-84 spheroid in a national or local projection) • the locality map and all other maps which must be in colour; • locality map showing property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map showing properties within 500m and prevailing or predominant wind direction; • the 1m contour intervals for gentle slopes must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; • areas with indigenous vegetation (even if it is degraded or infested with alien species); • locality map must show exact position of development site or sites; • locality map showing and identifying (if applicable) public and access roads; and • the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

	Note that separate maps can be used in the event it is not feasible have all the information on one map.

Should any activities in GN R. 985 be applied for, please provide a map indicating the triggering area (e.g. Critical Biodiversity Area, Protected Area, etc.) overlaid by the study area as **Annexure 4**.

3. ACTIVITY INFORMATION

Activity(s) Applied For

An application may be made for more than one listed or specified activity that, together, make up one development proposal. All the listed activities that make up this application must be listed below.

Indicate the number of the relevant Government Notice:	**Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3**	**Describe each listed activity as per the wording in the listing notices:**
GN. R 983, 8 December 2014	Listing Notice 1 Activity 2	" *the development of facilities or infrastructure for the generation of electricity from a renewable resource where* *(i) …* *(ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare;"*
GN. R 983, 8 December 2014	Listing Notice 1 Activity 13	"*The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014."*
GN. R 983, 8 December 2014	Listing Notice 1 Activity 27	"*The clearance of an area of 1 hectares 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*."
GN. R 985, 8 December 2014	Listing Notice 3 Activity 12	"*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.* ***C. Gauteng*** *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;* *ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or* *On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning*."

Please note that any authorisation that may result from this application will only cover activities applied for.

Sector Based Project Description

Please indicate which sector the project falls under by crossing out the relevant block in the table below:

Green economy + "Green" and energy-saving industries		Greenfield transformation to urban or industrial form	
Infrastructure – electricity (generation, transmission & distribution)		Biodiversity or sensitive area related activities	
Biofuels		Potential of metal fabrication capital & transport equipment – arising from large public investments	
Basic services (local government) – electricity and electrification		Boat building	
Basic services (local government) – area lighting		Manufacturing – automotive products and components, and medium and heavy commercial vehicles	
Infrastructure – transport (roads, land strips)		Manufacturing – plastics, pharmaceuticals and chemicals	
Basic services (local government access roads)		Manufacturing – clothing textiles, footwear and leather	
Basic services (local government) – public transport		Forestry, paper, pulp and furniture	
Infrastructure – water (bulk and reticulation)		Business process servicing	
Basic services (local government) – sanitation		Basic services (local government) – education	
Basic services (local government) – waste management		Basic services (local government) – health	
Agricultural value chain + agro-processing (linked to food security and food pricing imperatives)	X	Basic services (local government) – housing	
Infrastructure – information and communication technology		Basic services (local government) security of tenure	
Tourism + strengthening linkages between cultural industries and tourism		Other	
Basic services (local government) – public open spaces and recreational facilities			

4. GUIDELINES

4.1 Gauteng Pollution Buffer Zones Guideline, March 2017

Where applicable, the developer must incorporate the Pollution Buffers in the planning and design of the development to protect people and the environment from harmful/toxic emissions. The decision on the buffer size to be maintained is subject to a Departmental review process. The buffers are as follows:

BUFFER GUIDELINES	TICK WHERE APPLICABLE
Best case buffer of 1500m and worst case buffer of 750m must be maintained in Category 1 industries, such as Sasol, Arcelor Mittal, Scaw Metal, Eskom power stations etc. as per paragraph 6.2.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.	
Best case buffer of 500m and worst case buffer of 250m must be maintained in Category 2 industries, such as container depot in City Deep, panel beater workshops, tanneries etc. as per paragraphs 6.2.2 and 7.1 of the Gauteng Pollution Buffer Zones Guidelines, March 2017.	
Best case buffer of 100m and worst case buffer of 50m must be maintained in Category 3 industries, such as warehousing and distribution operations as per paragraphs 6.2.3 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.	
Best case buffer of 800m and worst case buffer of 500m must be maintained for Sewage treatment works as per paragraphs 6.2.4 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.	
Landfill sites have the following Maximum Buffer sizes as per paragraphs 6.2.5 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017: **Class A is 2000m** **Class B is 1000m** (*where Class B accepts hazardous waste, the buffer is 2000m*) **Class C is 400m** **Class D is 200m**	
Best case buffer of 100m and worst case buffer of 0m must be maintained for Mine Dumps (rock dumps or stockpiles) as per paragraphs 6.2.6 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.	
Best case buffer of 1000m and worst case buffer of 500m must be maintained for Mine Slimes Dams and Ash Dumps as per paragraphs 6.2.7 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.	
Best case buffer of 5000m and worst case buffer of 2000m must be maintained for the Pelindaba Nuclear Facility Complex as per paragraphs 6.2.8 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.	

The Gauteng Pollution Buffer Zones Guideline is not applicable to my development.	**X**

4.2 Sustainable Development Guideline, April 2017

The applicant must incorporate the Sustainable Development Principles in their development planning activities as outlined in **Section 6 of the Gauteng Sustainable Development Guideline**. Provide details of how efficiencies will be achieved on the items listed below:

WATER

How will the proposed development achieve **water efficiency** such as reuse of grey water, rainwater harvesting and use of water efficient equipment/technologies throughout its phases?

The cascading dam configuration improves water management efficiency through:

- Gravity-fed transfer between storage compartments
- Reduced pumping requirements between dams
- Optimised storage balancing
- Reduced spillage losses

The installation of HDPE lining further minimises seepage losses, ensuring efficient utilisation of abstracted water resources.

If not, state the reasons why your development will not explore and achieve water efficiencies.

n/a

ENERGY

What approaches will be adopted to achieve **energy efficiency** in the proposed development to reduce long-term operational costs and Greenhouse Gases emissions?

A key component of the project is the integration of hydropower-assisted pumping technology within the cascading transfer system. Energy generated from gravitational water flow will be used to supplement pumping operations, resulting in:

- Reduced reliance on grid electricity
- Lower operational energy costs
- Decreased carbon footprint
- Improved sustainability of irrigation operations

This aligns with national objectives promoting renewable energy and resource-efficient agricultural infrastructure.

If not, state the reasons why your development will not explore and achieve energy efficiencies.

WASTE

What approaches will be adopted to minimise quantities of waste generated and disposed of such as waste separation at source to enable reuse, reduction, recovery and recycling.

Excavated Material Reuse and Beneficial Use Motivation

Bulk earthworks associated with the excavation of the balancing dam basins will generate significant volumes of soil and overburden material. In line with best-practice resource efficiency and waste minimisation principles, the excavated material will be beneficially reused on site and within the broader construction sector.

Suitable excavated material will be selectively stockpiled and reused in the construction of the dam embankments, including the formation of wall structures, crest shaping and slope profiling. This approach reduces the requirement for importing borrow material while ensuring geotechnically compatible fill is utilised in dam construction.

Excess material that is not required for embankment construction will be processed through mobile crushing and screening equipment to produce G5-grade construction material suitable for use in the civil and building industry. The processed material will be supplied for use in road construction, platform preparation and related infrastructure works.

The reuse and beneficiation of excavated material provides the following environmental and socio-economic benefits:

- Minimises the volume of spoil requiring disposal
- Reduces the need for new borrow pits or quarrying activities
- Limits haulage and associated transport emissions
- Promotes circular resource use within the construction sector
- Generates secondary economic value from excavated material

This integrated materials management approach aligns with the waste hierarchy, favouring reuse and recycling above disposal, and significantly reduces the environmental footprint of the dam construction phase.

If not, state the reasons why your development will not explore and achieve waste reduction and separation at source.

N/A

DESIGN/LAYOUT OF DEVELOPMENT

How will the design or layout of the development facilitate resource efficiency (i.e. orientation or location of development) through all phases?

The design and spatial layout of the proposed cascading off-channel balancing dams, abstraction infrastructure and hydropower-assisted irrigation system have been specifically configured to optimise resource efficiency throughout the planning, construction, operational and decommissioning phases of the development.

Resource efficiency has been achieved through the strategic positioning of infrastructure, maximisation of natural topography, minimisation of material import/export requirements, and incorporation of renewable energy recovery systems.

Utilisation of Natural Topography

The cascading dam system has been positioned along an existing natural slope, allowing water to move between storage compartments via gravity rather than mechanical pumping.

This layout:

- Reduces long-term energy demand
- Minimises mechanical infrastructure requirements
- Optimises hydraulic head for energy recovery
- Limits bulk earthworks compared to alternative flat-site designs

The multi-compartment configuration also enables storage capacity optimisation while maintaining embankment wall heights below major dam safety thresholds.

Off-Channel Location

The dams have been located off-channel from the Suikerbosrand River and outside floodline and riparian buffer areas.

This spatial positioning:

- Avoids instream impoundment impacts
- Reduces sedimentation risk

- Limits aquatic ecosystem disturbance
- Minimises erosion and flood damage risk

The location therefore supports both environmental protection and infrastructure longevity.

Footprint Optimisation

The dam footprint has been placed on previously cultivated agricultural land, avoiding sensitive habitats and reducing the need for vegetation clearing or biodiversity offsets.

This reduces:

- Ecological disturbance
- Rehabilitation requirements
- Permitting complexity

Cut-Fill Balance Design

The dam basins have been designed to achieve a balanced earthworks profile.

Excavated material will be reused for:

- Embankment wall construction
- Crest formation
- Slope shaping

This significantly reduces:

- Importation of borrow material
- Heavy vehicle movements
- Fuel consumption and emissions
- Construction costs

Beneficial Reuse of Excess Material

Surplus excavated material will be crushed and screened to produce G5 construction material for use within the civil engineering sector.

This layout-driven materials strategy:

- Eliminates the need for spoil disposal sites

- Prevents unnecessary land disturbance
- Supports circular economy principles
- Reduces demand for virgin quarry material

Gravity-Driven Water Transfer

The cascading configuration enables water to move sequentially between dams via gravity.

Operational efficiencies include:

- Reduced inter-dam pumping requirements
- Lower electricity consumption
- Reduced pump wear and maintenance
- Improved system reliability

Hydropower Energy Recovery

Hydraulic energy generated through cascading flows will be harnessed via hydropower-assisted pumping systems.

This design element:

- Generates renewable energy
- Supplements pump power demand
- Reduces grid electricity reliance
- Lowers operational carbon footprint

Lined Storage Infrastructure

The inclusion of HDPE geomembrane liners enhances storage efficiency by:

- Preventing seepage losses
- Protecting stored water resources
- Improving irrigation yield per cubic metre abstracted

The design and layout of the proposed development facilitate resource efficiency across all project phases through:

- Strategic use of natural slope and gravity

- Off-channel siting
- Balanced earthworks design
- Reuse and beneficiation of excavated material
- Renewable energy recovery integration
- Seepage prevention through lining
- Optimised abstraction positioning

Collectively, these design measures minimise material consumption, reduce energy demand, limit environmental disturbance, and enhance the long-term sustainability of the agricultural water supply system.

If not, state the reasons why your development will not explore various layouts/designs to achieve resource efficiencies.

MATERIALS

In which phase of the development will the use of virgin materials be substituted with recycled/reused materials to reduce costs and emission of GHG while promoting environmentally friendly developments?

Reuse of Excavated Earthworks Material

Large volumes of soil and overburden will be generated through the excavation of the cascading dam basins.

In order to reduce reliance on virgin borrow materials, excavated material of suitable geotechnical quality will be selectively reused on site for:

- Dam embankment wall construction
- Crest formation
- Internal slope shaping
- Key trench backfilling
- General fill requirements

This cut-to-fill design approach significantly reduces the need to source virgin earthfill from external borrow pits or quarries.

Processing of Excess Material for Secondary Use

Excavated material not required for dam construction will be beneficially reused through crushing and screening to produce G5-grade construction material suitable for use in the civil construction industry.

The processed material may be used for:

- Road layer works
- Platform construction
- Building foundations
- Infrastructure bedding layers

This initiative reduces spoil disposal while substituting virgin aggregate demand within the construction sector.

Reduction in Imported Construction Materials

By reusing excavated material and producing processed fill material on site, the development reduces the requirement for:

- Imported fill material
- Quarry-sourced aggregates
- Commercial road-building material

This directly lowers construction input costs and transport requirements.

Greenhouse Gas (GHG) Emission Reduction Benefits

The substitution of virgin materials with reused and recycled materials contributes to reduced greenhouse gas emissions through:

- Reduced quarrying and raw material extraction
- Lower fuel consumption from haulage vehicles
- Decreased heavy vehicle traffic to and from site
- Reduced material processing energy off site

On-site processing and reuse therefore provide both cost and climate benefits.

If not, state the reasons why your development will not explore and achieve materials efficiencies.

DRAINAGE

To facilitate rainwater infiltration and mitigate flooding, what form of Sustainable Drainage System Principles/Technologies will be undertaken in your development?

The three cascading off-channel dams function as stormwater attenuation and storage infrastructure.

These dams:

- Capture surface runoff from the immediate catchment
- Attenuate peak stormwater flows
- Store excess runoff temporarily
- Release water in a controlled manner via spillways

Because the dams are off-channel, they reduce the risk of altering the natural hydrology of the Suikerbosrand River while still providing flood attenuation benefits.

The spillway design ensures that extreme rainfall events can be safely conveyed without increasing flood risk.

Although the dam basins are lined to prevent water loss, surrounding areas such as:

- Downstream embankment slopes
- Crest areas
- Peripheral stormwater runoff zones

will remain permeable and vegetated to allow natural infiltration of rainfall into the soil profile. This reduces the development's overall impervious footprint. This engineering approach aligns with SuDS principles of naturalised stormwater control.

The SuDS approach adopted provides the following flood mitigation advantages:

- Attenuation of peak rainfall events
- Controlled overflow management
- Reduced downstream flood velocity
- Reduced erosion risk
- Improved catchment-scale water buffering

By storing water during high rainfall events and redistributing it gradually through irrigation, the system contributes positively to local hydrological balance.

If not, state the reasons why your development will not explore innovative / technological approaches in the design of drainage system.

Project Schedule

A project schedule, indicating the different phases and timelines of the project, must be attached as **Annexure 5**.

5. PUBLIC PARTICIPATION PROCESS

If the public participation process and other aspects of the EIA process had already been undertaken prior to submission of this application form to the competent authority, a summary of public participation processes and steps followed to date must be described in the table below.

Public Participation will commence once the Application for Environmental Authorization is submitted and the draft BAR is completed. The Public Participation Process to be followed will be conducted in terms of the EIA Regulations, GN No. 982 of December 2014, promulgated under the National Environmental Management Act (No. 107 of 1998). The following public participation process will be followed:

1. Identification of I&APs:

I&APs will preliminary be identified by doing an internet search on Windeed, google, etc. thereby identifying the adjacent property owners. Other I&APs will include the relevant governmental departments such as the local municipality, Provincial department, etc.

2. Notice Board:

A notice board containing all the relevant information will be fixed to the site entrance, where the public will have access to view it.

3. Written Notice and Background Information Document (BID):

A written notice and BID will be drafted containing all the relevant information regarding the proposed activity. The Written Notice and BID will be distributed by E-mailing it to the identified I&APs, hand delivering it to the surrounding community in the area and or by registered post.

4. Advertisement:

An advertisement that contains all the relevant information will be placed in at least one local newspaper that is easily accessible to the community of the area.

5. Public Meeting:

A Public meeting is not planned for the project. But if it is requested, a meeting will be arranged.

6. Engagement with Governmental Departments:

All the relevant authorities will be identified and engaged during the public participation process.

7. Comments:

All comments will be recorded on a comments and response report once they are received. All comments will be incorporated into the final BAR.

6. SOCIO-ECONOMIC VALUES

Provide details on the anticipated socio-economic values associated with the proposed project

Anticipated CAPEX of the project on completion	+/- R 5 million
What is the expected capital value of the activity on completion?	+/- R 5 million
What is the expected yearly income that will be generated by or as a result of the activity?	+/- R 5 million
Will the activity contribute to service infrastructure?	NO
Will the activity contribute to a public amenity	NO
Total number of new employment opportunities to be created in the **construction phase** of this activity.	+/-10
Of these opportunities how many are:	
Women	+/- 2
People with disabilities	
Female	0
Male	0
Youth	
Female	+/-2
Male	+/-5
What is the expected value of the employment opportunities during the construction phase?	R 500 000
What percentage of this will accrue to previously disadvantaged individuals?	80 %
How many new skilled employment opportunities created in the construction phase of the project?	Not known
How many new un-skilled employment opportunities created in the construction phase of the project?	Not Known
Total number of new employment opportunities to be created in the **operational phase** of this activity.	+/- 5
Of these opportunities how many are:	
Women	+/-2
People with disabilities	
Male	+/-3
Youth	Not known
Female	Not known
Male	Not known
What is the expected current value of the employment opportunities during the first 10 years?	R Not known
What percentage of this will accrue to previously disadvantaged individuals?	Not known %

How many new skilled employment opportunities created in the operational phase of the project?	Not known
How many un-skilled employment opportunities created in the operational phase of the project?	Not known

Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The proposed development entails the construction of three cascading off-channel balancing dams, associated river abstraction infrastructure, hydropower-assisted pumping systems and irrigation distribution networks on agricultural land adjacent to the Suikerbosrand River.

The need and desirability of the project have been assessed with due consideration of applicable national, provincial and local planning frameworks, agricultural sustainability imperatives, efficient water resource utilisation requirements, and the socio-economic benefits associated with expanded irrigated agriculture. The assessment further considers climate resilience, renewable energy integration and responsible land use planning principles in determining the appropriateness of the proposed activity within the receiving environment.

Agricultural Water Security
Agricultural activities on the property are currently constrained by limited on-site water storage capacity and a reliance on direct abstraction from the Suikerbosrand River. Direct abstraction is inherently subject to seasonal flow variability, prolonged dry periods, drought conditions and regulatory abstraction controls, all of which introduce operational risk to irrigation-dependent farming activities.

The proposed balancing dams will provide secure off-channel storage of lawfully allocated water, enabling abstraction during periods of river flow availability and storage for use during low-flow or dry seasons. This will ensure irrigation supply continuity, stabilise crop production cycles and reduce the operational vulnerability of the farming enterprise to climatic fluctuations. The project therefore addresses a critical need for improved water security and enhanced climate resilience within the agricultural operation.

Irrigation Expansion and Food Production
The Applicant proposes to expand irrigated crop production on the property, which is directly dependent on the availability of reliable stored water resources. Without additional storage capacity, irrigation expansion would not be feasible due to the limitations associated with real-time river abstraction.
The development will enable the irrigation of new agricultural lands, improve crop yield and productivity, support diversification of crop cultivation and enhance the long-term financial viability of the farming operation. In the context of increasing national and regional pressures on food production systems, the project contributes positively toward broader food security objectives and sustainable agricultural intensification.

Water Use Efficiency
The cascading configuration of the balancing dams has been specifically designed to optimise water management efficiency. The system allows for gravity-fed transfer of water between storage compartments, thereby reducing the need for continuous mechanical pumping between dams. This configuration promotes storage balancing, minimises operational water losses and reduces the risk of uncontrolled spillage.
In addition, the installation of HDPE geomembrane liners within the dam basins will significantly reduce seepage losses, ensuring that abstracted water is conserved for productive agricultural use. Collectively, these design elements promote responsible and efficient utilisation of scarce water resources.

Renewable Energy Integration
A key component of the project is the integration of hydropower-assisted pumping technology within the cascading transfer system. Energy generated from gravitational water flow between dam compartments will be harnessed to supplement pumping operations within the irrigation system.
This renewable energy application will reduce reliance on grid electricity, lower operational energy costs, decrease the carbon footprint associated with irrigation pumping and improve the overall sustainability of the farming operation. The initiative aligns with national policy objectives promoting renewable energy adoption and resource-efficient agricultural infrastructure development.

Alignment with Agricultural Land Use
The proposed infrastructure will be developed on existing agricultural land previously utilised for cultivated crop production. The selected site therefore avoids the transformation of sensitive natural habitats and maintains the established agricultural land-use character of the area. By utilising already disturbed landscapes, the development limits ecological disturbance and supports sustainable land use planning principles.

Off-Channel Dam Design Advantage
The balancing dams have been designed as off-channel storage systems rather than instream impoundments. This design approach is environmentally preferable as it avoids direct alteration of river morphology, minimises impacts on aquatic ecosystems, reduces sedimentation within the river system and limits interference with natural flow regimes.
Water will be pumped into storage during authorised abstraction periods rather than impounded within the river channel itself, thereby maintaining downstream ecological flow processes.

Optimised Topographical Design
The cascading configuration utilises the natural slope of the property to facilitate gravity-driven water movement between storage compartments. This topographically responsive design reduces bulk earthworks when compared to a single large dam alternative, lowers embankment wall heights, improves structural safety and enhances hydraulic efficiency.
By working with the natural landscape rather than against it, the design minimises environmental disturbance while improving engineering feasibility and operational efficiency.

Optimised Topographical Design
The cascading configuration utilises the natural slope of the property to facilitate gravity-driven water movement between storage compartments. This topographically responsive design reduces bulk earthworks when compared to a single large dam alternative, lowers embankment wall heights, improves structural safety and enhances hydraulic efficiency.
By working with the natural landscape rather than against it, the design minimises environmental disturbance while improving engineering feasibility and operational efficiency.

Climate Change Adaptation
Projected climate variability, including increased drought frequency and rainfall unpredictability, necessitates improved on-farm water storage infrastructure. The proposed balancing dams will enhance climate adaptation by enabling the capture and storage of water during high-flow periods for use during drought conditions.
This reduces dependence on real-time river abstraction, stabilises irrigation supply and improves the long-term resilience of agricultural production systems under changing climatic conditions.

Therefore, the proposed cascading balancing dam and irrigation development is both needed and desirable as it will secure a sustainable water supply for agricultural activities, support expanded food production, improve water and energy use efficiency, and integrate renewable energy into irrigation operations. The off-channel design minimises environmental impacts while the use of previously disturbed agricultural land supports responsible land use planning.

Furthermore, the development will contribute to socio-economic upliftment through employment creation and agricultural value chain stimulation, while enhancing climate resilience within the farming sector. The project is therefore aligned with sustainable development principles and is considered an appropriate and justified land-use activity within the receiving environment.

Indicate any benefits that the activity will have for society in general:

The proposed development of cascading off-channel balancing dams, associated river abstraction infrastructure, hydropower-assisted pumping systems and expanded irrigation activities is expected to generate a range of positive socio-economic benefits for the surrounding local communities. These benefits will arise during both the construction and operational phases of the project and will contribute to local economic stimulation, employment creation and improved agricultural productivity within the region.

During the construction phase, the development will create temporary employment opportunities for both skilled and semi-skilled workers. Construction activities such as bulk earthworks, dam embankment construction, liner installation, pipeline installation and mechanical works will require a labour force that includes equipment operators, general labourers, truck drivers, artisans and site supervisors. Where feasible, the Applicant will prioritise the use of locally sourced labour, thereby creating short-term employment and generating income within nearby communities. This injection of wages into the local economy is expected to have secondary benefits for local businesses and service providers.

In the longer term, the operational phase of the development will support sustained employment through the expansion of irrigated agriculture on the farm. Increased irrigation capacity will necessitate additional farm workers, irrigation system operators, crop management staff, maintenance personnel and security services. Sustained agricultural employment is particularly important in rural areas where job opportunities are limited and farming activities often form the backbone of the local economy.

The project will further stimulate the local economy through the procurement of goods and services required during construction and operation. This includes the sourcing of construction materials, plant hire, fuel supply, equipment maintenance, accommodation and catering services. Local contractors and suppliers are expected to benefit from participation in the project, thereby strengthening regional economic activity. Increased agricultural production enabled by the development will also support downstream economic sectors such as produce transport, storage, processing and market supply chains.

The provision of reliable irrigation water will enhance agricultural productivity and contribute positively to food security within the broader region. Expanded irrigation will support increased crop yields, improved crop diversity and more stable agricultural output. This contributes not only to the financial sustainability of the farming enterprise but also to the availability of agricultural produce within local and regional markets.

Skills development and capacity building will also arise from the project. Local workers employed during construction and operation will gain experience in dam construction, earthworks, pipeline installation, irrigation infrastructure operation and general farm management practices. Health and safety training provided during the construction phase will further enhance worker competencies. These skills are transferable and may benefit workers in securing future employment opportunities beyond the project itself.

Additional indirect benefits may arise from infrastructure associated with the development. Access roads upgraded or maintained for construction purposes may improve local mobility. Furthermore, excess excavated material from dam construction will be processed into G5 construction material, which can be supplied to the local construction industry, thereby supporting regional infrastructure development while reducing the need for virgin quarry material.

The integration of hydropower-assisted pumping technology within the cascading dam system introduces a renewable energy component to the farming operation. This reduces reliance on grid electricity and lowers greenhouse gas emissions associated with irrigation pumping. The incorporation of renewable energy solutions demonstrates environmentally responsible agricultural practices and contributes to broader sustainability objectives within the region.
Finally, the increased water storage capacity created by the balancing dams will enhance the resilience of agricultural activities to climate variability, including drought conditions and erratic rainfall patterns. Improved water security reduces the risk of crop failure, supports sustained employment and strengthens the long-term viability of farming operations in the area.

In conclusion, the proposed activity will deliver multiple socio-economic benefits to local communities, including employment creation, economic stimulation, improved food production, skills development, infrastructure support, renewable energy integration and enhanced climate resilience. The development is therefore considered to have a positive socio-economic contribution within the receiving environment.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

As above

7. LIST OF ANNEXURES

		YES	N/A
Annexure 1	Proof of payment of a fee for this application	X	
Annexure 2	Proof and a motivation for exclusions from paying a fee		X
Annexure 3	Locality map	X	
Annexure 4	Geographical area map triggering a listed	X	
Annexure 5	Project schedule	X	
Annexure 6	Proof by way of copies of Environmental Authorisations obtained for the same property or submission of such applications		X
Addendum 1	Consent use of land form		X
Addendum 2	Declaration by the applicant	X	
Addendum 3	Declaration by the environmental assessment practitioner	X	
Annexure 7	Screening Tool Report	X	

ADDENDUM 1

8. CONSENT USE

Consent in terms of Regulation 39 of the 2014 NEMA EIA Regulations by the landowner or person in control of the land that the proposed activity/ies may be undertaken on the land in question

.

Notes for completing and submitting this form

(1) This form is current as of April 2025. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been released by the Department.

(2) Unless protected by law, all information contained in the form will become public information.

CONTACT INFORMATION

Name of land owner/ person in control of the land			
Trading name (if any):			
Contact person:			
Physical address:			
Postal address:			
Postal code:		**Cell:**	
Telephone:		**Fax:**	
E-mail:			

CONSENT

1. I/we the undersigned (insert the name/s of the owner/s of the land)
_____
_____
_____
_____

of identity number/registration number (insert the owner/s ID number/s or the registration number of the legal entity)
_____
_____

am/ are the registered owner/s of the property (insert description of the property/ies and title deed numbers)
_____
_____

located at *(insert physical address or a brief description of the location of the property)*

_____
_____
_____

2. I/ we hereby give consent to the applicant /person to whom the rights are to be transferred *(insert the name/s of the applicant/person/s)*

_____
_____
_____

of identity number/registration number *(insert the owner/s ID number/s or the registration number of the legal entity)*

_____
_____
_____

to undertake the following activity(ies) on the property *(insert a brief description of the project and identified activity(ies) in question):*

_____
_____
_____
_____

_____

Signature of land owner/person in control of the land or authorised representative

_____

Name of authorised person if the landowner is a legal entity

_____

_____

Date

GAUTENG PROVINCE
ENVIRONMENT
REPUBLIC OF SOUTH AFRICA

ADDENDUM 2

9. DECLARATION OF THE APPLICANT	
Project Title	Application for an Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land adjacent to the Suikerbosrand River.

I F.C. Roets, declare under oath that I

- am, or represent, the applicant in this application;
- have appointed ~~I will appoint (delete that which is not applicable)~~ an Environmental Assessment Practitioner (EAP) to act as the independent EAP for this application
- will provide the EAP and the competent authority with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred in complying with the Regulations, including but not limited to –
  - costs incurred in connection with the appointment of the EAP or any person contracted by the EAP;
  - costs incurred in respect of the undertaking of any process required in terms of the Regulations;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the Regulations;
  - costs in respect of specialist reviews, if the competent authority decides to recover such costs; and
  - the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the competent authority;
- will ensure that the EAP is competent to undertake the EIA process with respect to this application and that the EAP-
  - know the Act and the regulations, and how they apply to the proposed development
  - know any applicable guidelines and policies
  - performs the work objectively, even if the findings do not favour the applicant
  - disclose all information which is important to the application and the proposed development
- will inform all registered I&APs of any decisions taken by the competent authority in this regard;
- am responsible for complying with the conditions of any environmental authorisation issued by the competent authority;
- hereby indemnify the Government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant or EAP is responsible for in terms of these Regulations;
- will not hold the competent authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to obtaining an environmental authorisation or prior to an appeal being decided in terms of these Regulations;
- will perform all other obligations as expected from an applicant in terms of the Regulations;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of the EIA Regulations, 2014 and the NEMA.

F.C. Roets
Signature of the applicant/ Signature on behalf of the applicant:

Konings Kraal Boerdery
Name of company (if applicable):

05/04/2026
Date:

DduPlessis
Signature of the Commissioner of Oaths:

05/04/2026
Date:

Safety Coordinator
Designation:

Commissioner of Oaths Official stamp (Ensure the stamp is positioned on the same page as the oath)

I certify that the Deponent has acknowledged that he/she knows and understands the contents of this affidavit, that he/she does not have any objection to taking the oath, and that he/she considers it to be binding on his/her conscience and which was sworn to and signed before me.

at Vanderbijlpark **on the** 05th **day of** April **20**26
and that the administering oath complied with the regulations contained in Government Gazette No. R1258 of 21 July 1972, as amended.

DduPlessis
COMMISSIONER OF OATHS (RSA)
DEBORA DU PLESSIS - Safety Coordinator
Ref: ECOS/06/2018-20/06/2018
Colosseum Building, Unit 2
Cnr. of Dellus and Chopin Street
Vanderbijlpark, 1911

GAUTENG PROVINCE
ENVIRONMENT
REPUBLIC OF SOUTH AFRICA

ADDENDUM 3

10. DECLARATION OF THE EAP	
Project Title	Application for an Environmental Authorization for the Proposed Development of Cascading Off-Channel Balancing Dams, River Abstraction Infrastructure and Hydropower-Assisted Irrigation System on Agricultural Land adjacent to the Suikerbosrand River.

I Karien Zantow, declare that -

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

Signature of the Environmental Assessment Practitioner:

ZANTOW ENVIROMENTAL CONSULTING SERVICES CC

Name of company:

7/4/2026

Date:

DduPlessis

Signature of the Commissioner of Oaths:

07/04/2026

Date:

Safety Coordinater

Designation:

Commissioner of Oaths Official stamp (Ensure the stamp is positioned on the same page as the oath)

I certify that the Deponent has acknowledged that he/she knows and understands the contents of this affidavit, that he/she does not have any objection to taking the oath, and that he/she considers it to be binding on his/her conscience and which was sworn to and signed before me.

at Vanderbijlpark on the 07th day of April 20 26

and that the administering oath complied with the regulations contained in Government Gazette No. R1258 of 21 July 1972, as amended.

DduPlessis

COMMISSIONER OF OATHS (RSA)
DEBORA DU PLESSIS - Safety Coordinator
Ref: EC05/06/2018-20/08/2018
Colosseum Building, Unit 2
Cnr. of Delius and Chopin Street
Vanderbijlpark, 1911

If the EAP or specialist is not independent (Regulation 13(2) and (3) of the EIA Regulations, 2014), the proponent or applicant must, before conducting public participation, appoint another EAP or specialist which meets all the general requirements including being independent, to externally review all work undertaken by the EAP or specialist, at the applicant's cost appointed to manage the application.

11. LIST OF ANNEXURES

		YES	N/A
Annexure 1	Proof of payment of a fee for this application	x	
Annexure 2	Proof and a motivation for exclusions from paying a fee		x
Addendum 1	Consent use of land form		x
Addendum 2	Declaration by the applicant	x	
Addendum 3	Declaration by the environmental assessment practitioner	x	