CONFIDENTIAL DOCUMENT

TERMS OF REFERENCE FOR THE COMPILATION OF A HYDRO GEOLOGICAL CONSULTING SERVICES STUDY FOR GROUNDWATER POTENTIAL DETERMINATION AND PRODUCTION BOREHOLE DEVELOPMENT FOR THE NEW SEKHUKHUNE GOVERNMENT OFFICE COMPLEX SITUATED IN JANE FUSE (LIMPOPO PROVINCE)

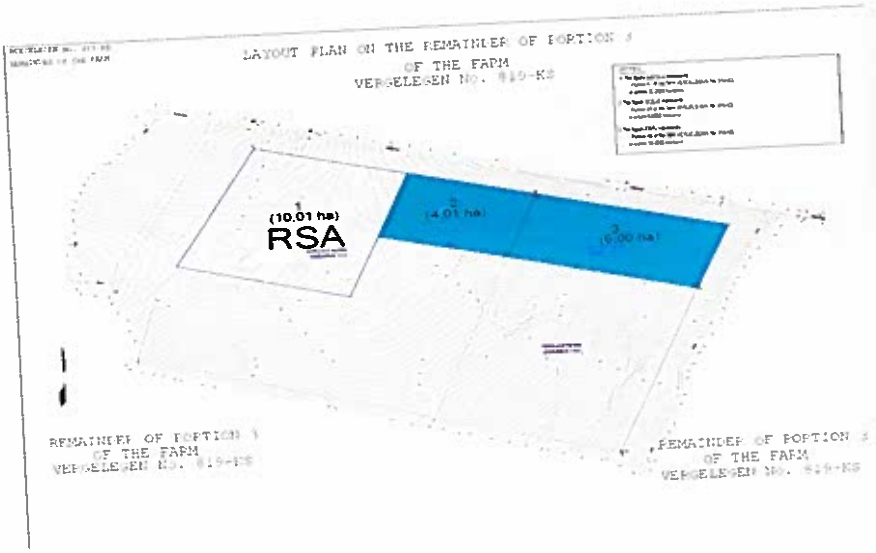
The hydro geological study for the Proposed Government Offices is situated on Portion 47, 48 and 49 of the farm Vergelegen, Makhuduthamaga Local Municipality, Limpopo Province

1. PROJECT DESCRIPTION:

RFQ OF A HYDRO GEOLOGICAL CONSULTING SERVICES STUDY FOR GROUNDWATER POTENTIAL DETERMINATION AND PRODUCTION BOREHOLE DEVELOPMENT FOR THE NEW SEKHUKHUNE GOVERNMENT OFFICE COMPLEX SITUATED IN JANE FUSE (LIMPOPO PROVINCE)

- Address: Botlokwa Road – approximately 2 Km from the Jane Furse Hospital and 4 Km from the Jane Furse CBD (Manchidi Street).
- Coordinates: South: 24° 44' 06.37" & East: 29° 50' 29.49".
- Locality: Jane Furse (Google Earth Imagery)

Commented [a1]:



1.1. Project Objectives:

The objective of the project is as follows:

a) The objective of the project is the relocation of the existing Provincial Government Offices offices from Lebowakgomo to Jane Furse. The design and construction of new Office Accommodation for all Provincial Government Departments on the defined site will follow once the hydro geological study has been completed. The area plan shows the area earmarked for the development.

b) Prior to commencement of the design work, a hydro geological study is required since a estimated workforce of 1500 employees will be accommodated at the new office complex.

c) Expected water use should include storage capacity for domestic water use, fire compliance and irrigation of external garden areas.

1.2. Objective of the professional service provider:

The Professional Service Provider will be required to compile a study covering the following:

- To assess the feasibility of developing sustainable groundwater supply through production boreholes for the new office complex in the Sekhukhune District of the Limpopo Province. The work will determine groundwater availability, quality, and

long-term sustainability to support the planned demand. The proposal will be based on the water demand defined by the client for the proposed development.

2. SCOPE OF WORKS

2.1 Desktop Study:

- Source and review available geological and hydrogeological maps, reports, and previous studies in the project area.
- Liaison with Department of Water and Sanitation and Stakeholders in the project area related to existing groundwater abstraction and registered and licensed abstraction volumes.
- Collate regional and local borehole data (yields, depths, water strikes, water levels, quality).
- Review hydrogeological setting, aquifer types, transmissivity, storativity, and recharge characteristics.
- Identify potential constraints such as water use licensing requirements, environmental sensitivities, and existing groundwater users.
- Compile conceptual groundwater model.
- Delineate Groundwater Resource Unit with preliminary groundwater balance assessment.

2.2 Site Reconnaissance & Ground Truthing:

- Site verification & hydro census to confirm all existing boreholes within a 1km radius of the proposed development. Hydrogeological mapping.
- Evaluate site conditions, land ownership, access for drilling, and delineate groundwater exploration target areas.
- Identify areas of potential risk (septic tanks, waste dumps, fuel storage, contaminated land) that may impact groundwater quality.

2.3 Geophysical Investigations:

- Undertake geophysical surveys (magnetic/electromagnetic/resistivity/AMT) to delineate subsurface geology and locate optimal borehole targets.

- Interpret data to define drilling sites, aquifer boundaries, and fracture zones.

2.4 Borehole Siting, & Drilling & Supervision:

- Recommend exploration borehole exploration sites based on geophysical interpretation and
- hydrogeological assessment.
-
- Compile RFQ/Tender documentation for borehole drilling and testing contractors ~~(including laboratory costs) to be appointed by the client. Assist client with technical~~ adjudication.Recommend suitable drilling method.
- Provide drilling and supervision on the approved sites, including lithological logging, water strike depth
- identification, blow yield estimation, and preliminary water quality field testing.
- Advise on borehole design and construction (casing, screens, sealing, gravel packs).

2.5 Aquifer Testing & Analysis:

- Design and supervise step drawdown and constant rate pump tests.
- Monitor groundwater levels and recovery curves during tests.
- Analyse test data to determine aquifer parameters (transmissivity, storativity, specific capacity, sustainable yield).

2.6 Water Quality Assessment:

- Supervise the collection of groundwater samples by the testing contractor for SANAS approved laboratory analysis (physico-chemical and bacteriological).
- Compare results to national drinking water standards and SANS 241 guidelines.
- Assess potential treatment requirements.

2.7 Groundwater Resource Evaluation:

- Estimate sustainable abstraction volumes for the development in relation to the stated water demand.
- Assess potential impacts of abstraction on neighbouring boreholes, ecosystems, and aquifer sustainability.
- Consider seasonal variability and long-term resource management.

Formatted: Font: (Default) Arial, Font color: Custom Color(RGB(33,33,33))

Formatted: Font: (Default) Arial, Font color: Custom Color(RGB(33,33,33))

Formatted: List Paragraph, Indent: Left: 0 cm, Hanging: 0.75 cm, Bulleted + Level: 1 + Aligned at: 0.63 cm + Indent at: 1.27 cm

Formatted: List Paragraph, Left, Indent: First line: 0 cm, Line spacing: single

Formatted: List Paragraph, Indent: Left: 0 cm, Hanging: 0.75 cm, Bulleted + Level: 1 + Aligned at: 0.63 cm + Indent at: 1.27 cm

Formatted: Font: (Default) Arial, Font color: Custom Color(RGB(33,33,33))

Formatted: List Paragraph, Indent: Left: 0 cm, Hanging: 0.75 cm, Bulleted + Level: 1 + Aligned at: 0.63 cm + Indent at: 1.27 cm

2.8 **Reporting & Recommendations:**

- Prepare a comprehensive hydrogeological report covering:
  - o Geological and hydrogeological setting
  - o Geophysical survey results
  - o Drilling results and borehole construction
  - o Sustainable borehole yield analysis
  - o Water quality results and compliance with SANS241 drinking standards
  - o Recommended sustainable abstraction rates and equipping recommendations
  - o GIS map compilation.
  - o Long-term groundwater monitoring and management plan
- Provide input to Water Use License Application (WULA) or General Authorisation process if required.

3. **Deliverables:**

- Desktop study summary and conceptual hydrogeological model.
- Geophysical survey results and borehole siting recommendations.
- RFQ/Tender documentation for borehole drilling and testing contractors to be appointed by the client.
- Borehole drilling logs, construction details, and test pumping results.
- Water quality laboratory analysis and interpretation.
- Final hydrogeological feasibility report with recommendations on abstraction potential and development suitability.

4. **Programme & Duration:**

- Estimated timeframe:
  - To be defined depending on water demand, regulatory approvals, drilling logistics, and test pumping duration.

5. **Exclusions:**

- ~~Drilling and borehole testing contractor services (to be appointed directly by client).~~
- Pump and electrical installations.
- Long-term groundwater monitoring (can be scoped separately).
- Water Use Licensing

6. KEY PROFESSIONALS

CVs and Qualifications of the following registered professional to be provided:

- 1 x Geohydrologist registered with SACNASP (South African Council for Natural Scientific Professions) as **Pr Sci.Nat.** with more than 3 years post registration experience in who can sign off scientific reports.

2.1. **Professional Geohydrologist**

- Name & Surname: .....
- Qualifications: .....
- Prof Registration Number: .....
- Years of Experience post registration: .....
- Role & Responsibilities:

.....

.....

.....

.....

7. RETURNABLE DOCUMENTATION:

Quotations will be evaluated in terms of functionality and price.

The following **MUST** be submitted with this quotation in order for it to be considered:

a) SBD Documents;
b) Company CSD report;
c) Company regstration documents;
d) Professional indemnity insurance – minimum R 3 million issued by a registered financial services provider;
e) Director's ID copy;
f) Fully completed Pricing Schedule;
g) Service Providers is required to attach academic qualifications, professional registration & CV (max 3 pages - clearly showing experience in the field of hydrological investigations)
h) The bidder's tax matters with SARS must be in order for them to be awarded.
i) **Failure to comply with item 7(a to h) will result in disqualification.**

8. DELIVERABLES AND PRICING SCHEDULE:

The **HYDRO GEOLOGICAL** study shall include the following deliverables:

No	Description	Unit	No	Rate	Total
1	Desktop Study Report (See item 2.1)	Item	1		
2	Site reconnaissance, ground truthing, geophysical investigations & borehole siting report (See item 2.2 & 2.3 & 2.4)	Item	1		
35	Drilling of Boreholes inclusive of pump tests (Contractor to be appointed)	PC	1	250 000	
43	Borehole drilling supervision, aquifer testing & aquifer analysis & water quality assessment & groundwater resource evaluation report (See item 2.4 & 2.5 & 2.6 & 2.7)	Item	1		
54	Close out report (See item 2.8)	Item	1		
5	~~Drilling of Boreholes inclusive of pump tests (Contractor to be appointed)~~	PC	1	250 000	
6	Accommodation	Days	5		
7	Travelling	kKm			
8	Typing – A4	Page	300		
9	Duplicating – A4	Page	1200		
10	Drawings / Maps A3	No	40		
	Sub Total:				
	VAT @ 15%				
	TOTAL (Incl. VAT)				