



Terms of Reference

Groundwater Assessment with borehole drilling at two selected schools in the Chris Hani District Municipality

Type of Contract:	Institutional Contract (National)
Languages:	English
Duration:	2 to maximum 3 months
Location:	South Africa
Deadline:	16 th October 2020

1. INTRODUCTION

The South African Wind Energy Project Phase 2 (SAWEP 2) is funded by the Global Environment Facility (GEF) with the Department of Mineral Resources and Energy (DMRE) as the Executing Entity/Implementing Partner, and supported by the United Nations Development Program (UNDP) South Africa Country Office. SAWEP supports the Government of South Africa in promoting the large-scale commercialisation of wind energy. In order to achieve this, the project focusses on four components: Component 1: Monitoring and Evaluation of the implementation of local content requirements, Component 2: Resource-mapping and wind corridor development support for policy-makers, Component 3: Support for the development of small-scale wind sector and Component 4: Training and human capital development for the wind energy sector. Each component is associated with specific outputs and a set of activities.

2. BACKGROUND

This Terms of Reference (TOR) relates to the SAWEP 2 Component 3: Support for the development of small-scale wind sector. A need was identified, following meetings and discussions with key Eastern Cape stakeholders, Education, Roads & Public Works etc that were facilitated by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT), to pilot small scale wind water pumping at selected schools in the Eastern Cape Province. Some of these schools have food gardens with some biogas digester systems that can also benefit from the small scale wind water pumping systems. It was then agreed in a follow up meeting with DEDEAT, Roads and Public Works, Chris Hani District Municipality (CHDM) and WESSA* for SAWEP to support (pilot) small scale wind water pumping at selected schools in the CHDM where WESSA is also implementing its Eco schools programme that can incorporate and support the small scale wind water pumping. The small scale wind water pumping systems (sswt) to be installed will be handed over to CHDM, Roads

and Public Works on completion with a groundwater management plan. An Assessment of the Groundwater resource with borehole drilling at the selected schools are required.

* WESSA (Wildlife & Environment Society of South Africa) is implementing through the Chris Hani District Municipality (CHDM), its Eco schools programme at some schools in the CHDM.

Organisational setup

- SAWEP is a GEF funded and UNDP-supported Project.
- UNDP is considered the ‘Employer’ and is responsible for issuing of this contract, its administration and making payments.
- The SAWEP Project Coordination Unit (PCU) will manage the project on behalf of the UNDP and be the contact for the consultant
- Liaison with listed schools, CHDM, Eastern Cape Department of Roads & Public Works, Department of Water and Sanitation, East London office.

3. OBJECTIVE

The objective of this ToR is to undertake (Phase 1) Scientific Groundwater Assessment at two selected schools in the CHDM and to be followed (Phase 2) with the drilling of a of maximum two boreholes, one per school with a Groundwater Management plan, both to be equipped (separate contract) with small scale wind water pumping systems.

This terms of reference for consistency is based on and makes use of the Department of Water and Sanitation bid No W11032: Hydrogeological Consulting Services for South Africa.

<http://www.dwa.gov.za/Tenders/Docs/2016/W11032%20Nat%20HYDROGEOLOGICAL%20CONSULTING%20SERVICES%20%2020160331.pdf>

4. SCOPE OF WORK

Project area

The project area comprise and is limited to the school grounds of the selected schools in the Eastern Cape Province, Chris Hani District Municipality and to be informed by the separate bid “*Engineering Services for Small Scale Wind Water Pumping at selected CHDM schools*” (two selected schools from Candidate School list)

4.1 General Scope of Work

4.1.1 Hydrogeological

The hydrogeological consultant will be remunerated at the tariffs applicable for personnel fees, geophysical and other instrument usage, and the reimbursable expenses (as specified in clause 6 of this document – Personnel, Fees, and Tariffs) on a cost and time basis for consulting services related to general hydrogeological scope of works as listed below:

HGS1 Preparation of Project Execution Plan (Phase 1 and 2)

HGS2 Liaison with SAWEP PCU, schools, CHDM and DRPW (Phase 1 and 2)

HGS3 Project co-ordination and Contractors site meetings (Phase 2).

HGS4 Borehole drilling and borehole test pumping (Phase 2)

- The consultant to provide or sub contract borehole drilling and borehole test pumping services
- The consultant to administer the borehole drilling and borehole test pumping services with sub contractors.

HGS5 Project progress reporting, weekly or as required by Employer, siting data report, with graphical format of geophysical data and Locality map (depicting traverses target structures and drilling sites) (Phase 1)

HGS6 Submission of project borehole information to the Employer (Phase 2)

HGS7 Allocation of numbers to newly drilled boreholes based on the implemented unique numbering system of each Province and subsequent plant of pole with engraved allocated number as specified by DWS (Phase 2)

Project Execution Plan (PEP)

Within 5 days of awarding of the contract, the consultant shall prepare, and submit to the SAWEP PCU for consent a detailed Project Execution Plan (PEP) of all of the activities related to the execution of Phase 1 and Phase 2 of the Project, including the reviewed and accepted program of the borehole drilling and pump testing contractor(s) and shall include all activities that interface or otherwise relate to the work of the borehole drilling and pump testing contractor(s).

When this PEP has been approved by the SAWEP PCU, it shall become the new base-line program for monitoring the execution of the Project (the progress monitoring with milestones) and shall not be modified or revised without the prior consent of the SAWEP PCU.

If updating of the PEP is required, a revised PEP shall be prepared by the consultant with the borehole drilling and pump testing contractor(s) and resubmitted to the SAWEP PCU for its consent. When approved, this PEP will become the new baseline program for all future work. During the performance of the work, the consultant shall monitor this PEP and shall provide update reports on a monthly basis together with a monthly report on progress of the works. The monthly updates of the consultant shall be monitored against the approved PEP and all variations shall be noted. The future impact of major variations shall be determined and analyzed. Necessary corrective measures or re-planning of the consultant's work shall be established by the SAWEP PCU. The SAWEP PCU shall be notified of corrective measures. When approved, this PEP will become the new baseline program for the project.

Reporting and working arrangements

The consultant's monthly report shall be coordinated with the requirements set forth in "Project Execution Plan" to include submission of the following:

- Cumulative expenditure record and estimated cost at completion of each item or services;
- Provide any special reports as requested by the Employer.

Duration

It is estimated that the Scientific Groundwater Assessment Phase 1 at the two selected schools would take maximum 1 month to be followed with the Borehole drilling & Groundwater Management Phase 2 including Groundwater management plan which will take another 2 months, resulting in a total or maximum 3 months to complete this assignment. Phase 2 to only proceed with confirmation by the SAWEP PCU.

Remuneration and Payment

Payment shall be made as approved by the SAWEP PCU and as per the Project Execution Plan.

4.2 Specific Scope of Works (HSS)

4.2.1 Hydrogeological

The scope of work for groundwater resource development is specified for sequential hydrogeological activities. The specific scope of work listed below is itemized in the Schedule of Rates and the consultant will be remunerated for the bidded total rate per specified unit. Specified units include school (sch) and borehole (bh).

Applicable reimbursable expenses for each item are listed in the Schedule of Rates (see Phase 1 Annexure 1 and to be indicated in the Reimbursable Cost Annexure 2; Phase 2 Annexure 4 and to be indicated in Reimbursable Cost Annexure 5)

Items of specific work which are inclusive of a variety of consulting hydrogeological services / activities are:

PHASE 1: Scientific Groundwater Assessment

HSS5. Scientific Groundwater Assessment

HSS5.1 Static water level less than 50 m (one priority exploration drilling site plus alternative site per school) - Per borehole drilling site within schools area

Consulting activities to include:

- * Liaison schools, CHDM, DRPW
- * Geological and geophysical investigations
- * One day geophysical survey to include at least two of the following methods:
magnetic, frequency domain electromagnetic and/or DC resistivity
- * Minimum of 1 km geophysical profiling is required
- * Data processing, interpretation and site selection
- * Marking of borehole site in the field and specify GPS co-ordinates
- * Compile siting data report, with graphical format of geophysical data and
Locality map (depicting traverses, target structures and drilling sites)

HSS5.2 Static water level deeper than 50 m (one priority exploration drilling site plus alternative site per school) – per borehole drilling site within schools area

Consulting activities to include:

- * Liaison school, CHDM, DRPW
- * Geological and geophysical investigations
- * Two day geophysical survey to include the magnetic method and at least one of the following methods:
 - DC resistivity soundings (depth to 150 m), as per survey layout
 - DC resistivity (multiple configuration system, imaging)
 - TDEM/CSAMT Electromagnetic sounding / profiling
- * Minimum of 1 km geophysical profiling is required
- * Data processing, interpretation and site selection
- * Marking of borehole site in the field and specify GPS co-ordinates

- * Compile siting data report, with graphical format of geophysical data and locality map (depicting traverses, target structures and drilling sites)

PHASE 2 Borehole drilling & Groundwater Management

Phase 2 of the assignment shall only be carried out by the Consultant on receipt of written confirmation from the SAWEP PCU and after satisfactory completion of Phase 1.

HSS6. Drilling of borehole (max one borehole per selected school)

Consulting activities to include:

- * Confirm with employer the drilling of borehole (max one per school)
- * School liaison
- * Liaison drilling contractor (programme, certification of invoices)
- * Controlled drilling supervision
- * Ensure contractors maintain site diaries & site instruction book
- * Submission of water samples to Lab for prescribed analysis for complete macro and specified tracer elements as required for domestic use
- * Data processing & analysis (including water chemistry)
- * Drilling depth up to 120 meters or deeper if so required by employer
- * Electronic format of borehole information for submission to DWS
- * Compile drilling data report & recommend required borehole test pumping

HSS7. Pump testing of borehole

Consulting activities to include:

- * Confirm with Employer testing of borehole
- * School Liaison
- * Liaison testing contractor (programme, certification of invoices)
- * Controlled testing supervision
- * Ensure contractors maintain site diaries & site instruction book
- * Submission of water samples to Lab for prescribed analysis for complete macro and specified tracer elements as required for domestic use
- * Data processing & analysis (including water chemistry & observation boreholes)
- * Testing depth up to 120 meters or deeper if so required by employer
- * Electronic format of borehole information for submission to DWS
- * Compile testing data report & borehole management recommendation

HSS8. Management of groundwater schemes:

HSS8.1 Development of a groundwater management plan for all new boreholes

Consulting activities to include:

- * Liaison & co-ordination (School, CHDM, DRPW) to confirm per school responsible individual(s) and record details
- * Agree with the School, CHDM and DRPW on (1) the Monitoring parameters (What?), (2) the types of monitoring points, quantity measurements and sampling procedures

- (Why?), (3) the frequency of sampling and quantity measurements (When?), and (4) the reporting
- * Report with proposed groundwater level and/or water quality monitoring network as well as implementation and maintenance plan.

HSS8.2 One trial run with appointed individual(s) of Implementation and maintenance of a groundwater management plan for all new boreholes

- * Collect monitoring data
- * Capture and process collected monitoring data on prescribed software/database
- * Assess data and compile resource status report
- * Advise School, CHDM and DRPW on mitigation measures in terms of quantity and quality to sustain the aquifer
- * Provide training and awareness to the School, CHDM and DRPW to take over and maintain groundwater management plan

HSS9. Technical completion report for the new boreholes

Consulting activities to include for each borehole:

- * Submission of borehole data in electronic format and also to DWS
- * Technical report requirements as described in clause 4-6-2, Part 1 - Section 4, of the Department "**Minimum standards and guidelines for groundwater resource development for the community water supply and sanitation programme**" (First Edition, April 1997, see Appendix 1)

4.3 Scope of Work summarised

HGS: General Scope of Services (Phase 1 and 2)

HSS5: Scientific Groundwater Assessment (Phase 1) with siting data report, with graphical format of geophysical data and locality map (depicting traverses, target structures and drilling sites)

HSS6: Drilling of new borehole (Phase 2)

HSS7: Pump testing of new borehole (Phase 2)

HSS8: Develop Groundwater Management plan for all the final schools to be equipped with small scale wind turbines (sswt) (Phase 2)

With one trial run of the Groundwater Management implementation with the appointed individuals at each of the schools to be equipped with sswt (Phase 2)

HSS9: Technical completion report for the new boreholes (Phase 2)

5. STAFFING

5.1 Conduct and Experience

The Consultant's and sub-contractors staff shall at all times act professionally and with integrity, objectivity and independence and shall have the necessary professional knowledge, skill and experience to undertake the assignment.

5.2 Specialized Skills

Personnel with specialized skills including Graphic Information Systems (GIS), Remote Sensing, Aquifer Recharge and Modelling and Scheme design that may be required. These skills shall be provided using the rates set out in the Schedule of Rates. The Consultant shall demonstrate to the Employer that they have the range of skills, experience and resources necessary to meet the core requirements of this contract while also having the resources and skills to meet requirements for specialist personnel.

5.3 Experience

5.3.1 Hydrogeological

The Hydrogeological Consultant shall demonstrate experience in groundwater resource development for community water supply, resource assessment, resource management, and have sufficient technical resources. The Hydrogeological Consultant shall have knowledge of, inter alia:

- * Groundwater source development for community water supply, resource assessment and management and the minimum standards and guidelines by DWS
- * Contractual administration and supervision of drilling and testing contractors
- * Programme and project management
- * Graphic Information Systems, Remote Sensing techniques and groundwater data base
- * Word processing, spreadsheets, database programmes and data interpretation

5.4 Requirements

The following Employer's Requirements should also be noted:

- * Liaison with schools will be through the CHDM. The particular structure of the liaison with the school will be specified for each school and clarification of these structures and relationships will form part of the Project Execution Plan (PEP).
- * The BID rates shall be submitted in the form of a Schedule of Rates (see Annexure 1).
- * The rates will be applied unaltered to work carried out anywhere in the Project Area
- * Where the Schedule of Rates does not cover all rates required for a particular Project, additional rates shall be negotiated prior to the approval of the PEP for the Project.
- * Sub-contracting is only allowed for borehole rehabilitation, drilling and borehole test pumping where these services are not provided by the consultant.

6. PERSONNEL, FEES AND TARIFFS

6.1 Notes on Personnel, Fees and Tariffs

- * All rates and sums of money quoted in the Schedule of Rates shall be in South African Rands.
- * The quantities of work accepted and certified for payment shall be used for determining payments to the Consultant. Rates shall be binding.
- * The Bidder shall enter an applicable rate or quantity in the Schedule of Rates for each scheduled item for the Bidded service centre. The Consultant will not be paid for items against which no rate has been entered in the BID, as it is assumed that the Consultant has included the cost of such work in other rates.
- * Payment based on the rates Bidded in the Schedule of Rates shall cover all the services and incidentals included in the Works covered by the Contract and shall be made in accordance with the Contract.
- * The Bidder shall ensure that BID forms are filled in with the applicable amounts.

- * Travelling will be billed on a monthly basis in accordance with the applicable UNDP transport rates. All vehicles used and the applicable rates will be agreed between Employer and the Consultant prior to use. Travelling expenses claimed will be applicable from the specified point of service or Consultant's office, whichever is less.
- * The Bidder shall put forward the various specialists and sub-contractors allowed for only borehole drilling and test pumping that are proposed for the project.

6.2 Tariffs applicable for Personnel Fees

6.2.1 Hydrogeological

All consulting personnel shall be categorized in seven main categories. These hourly and daily rates for personnel categories will remain fixed from commencement till the contract expires.

Category F

F.1 Partners, directors or associates with more than 12 (twelve) years' experience in hydrogeological investigations and who possess a minimum qualification of an MSc degree in Geology, Geohydrology or Geophysics or an MTech degree in Geotechnology.

F.2 Partners, directors or technical director with more than 12 (twelve) years' experience in hydrogeological investigations and who possess a minimum qualification of a BSc Hon degree in Geology, Geohydrology or Geophysics or a BTech degree in Geotechnology.

Category E

E Personnel with more than 12 (twelve) years' experience in geohydrological investigations and who possess a minimum qualification of a BSc Hon degree in Geophysics, Geology or Geohydrology or a National Diploma (NDT) in Geotechnology.

Category D

D Personnel with between 8 (eight) to 12 (twelve) years' experience in geohydrological investigations and who possess a minimum qualification of a BSc Hon degree in Geophysics, Geology or Geohydrology or a National Diploma (NDT) in Geotechnology.

Category C

C Personnel with between 4 (four) to 7 (seven) years' experience in geohydrological investigations and possessing a BSc (Hon) degree in Geophysics, Geology or Geohydrology or National Diploma (NDT) in Geotechnology as a minimum qualification.

Category B

B Personnel possessing a BSc degree in Geophysics, Geology or Geohydrology or National Diploma in Geotechnology as a minimum qualification.

Category A

A1 Computer operators with a minimum of 5 (five) years relevant experience and grade 12 as minimum qualification.

A2 Computer operators with less than 5 (five) years relevant experience and Grade 12 as minimum qualification.

A3 Geophysical equipment operator or field assistant with a minimum of five years relevant experience and Grade 12 or equivalent qualification as a minimum qualification.

<u>Category</u>	<u>Hourly rate (maximum)</u>	<u>Daily rate (maximum)</u>
F.1	R1564.00	n/a
F.2	R1247.00	n/a
E	R906.00	R6 340
D	R774.00	R5 420
C	R564.00	R3 160
B	R413.00	R2 891
A	R303.00	R2 121
A	R222.00	R1 554
A	R163.00	R952

Tariffs for specialist services are to be Bidded for in the Schedule of Rates.

Maximum chargeable activities by personnel category

<u>Activity</u>	<u>Personnel Category</u>	
	<u>Hourly</u>	<u>Daily</u>
Preparation of Project Execution Plans	F, E	
Liaison	F, E	
Project Co-ordination & site meetings	F, E	
Administration of bh drilling and test pumping contractor	D, C	
Desk Study	D, C	
Air photo interpretation / Desk study	D, C	
Siting		C, B
Drilling supervision		C, B
Testing supervision		B
Data analysis (siting, drilling, testing)	D, C	
Report writing	E, D, C	

6.3 Equipment Tariffs

6.3.1 Tariffs applicable for Geophysical Equipment and other Instrument Usage

These rates for geophysical equipment and other instrument usage will remain fixed for the contract.

Electromagnetic profiling / sounding systems	
- Geonics EM34_3, Genie SE_88, MaxMin	R890.00/day
- VLF (EDA Omnipus or Wadi systems)	R450.00/day
- TDEM / CSAMT	R3000.00/day
DC Resistivity _ Single configuration	R170.00/day
DC Resistivity _ Multiple configuration, Imaging (Scintrex, Iris, Abem)	R1800.00/day
Magnetometer (manual or program)	R220.00/day
EKS (Groundflow)	R1300.00/day

Gravity meter (Sodin / Scintrex CG2)	R500.00/day
Gravity meter (Autograv CG3)	R1800.00/day
Levelling apparatus	R80.00/day
Electrical conductivity meters	R70.00/day
GPS (handheld)	R60.00/day

Rates for other specialized field equipment to be motivated and submitted for approval by the Employer.

All invoices submitted by the Consultant shall be broken down into individual component items to fairly reflect the individual amounts making up the total of the amount invoiced.

7. CRITERIA FOR SELECTION

Applicants will be evaluated based on the lowest priced technically qualified methodology. When using this method, the award of the contract will be made to the service provider whose offer has been evaluated and determined as responsive/ compliant and having received the minimum score of 70% out of 100 % of the technical score. Selection criteria will be based on functionality, educational background, skills and experience. The selection of the successful service provider will be aimed at maximizing the overall qualities in required areas of competence.

Out of the maximum score of 100 points, the score for technical criteria will be 70% - 70 points, and for financial criteria 30% - maximum 30 points.

Technical Criteria - 70% of total evaluation (70/100) – max. 100 points:

(a) Firm's Experience

	Maximum Points
Extent of management and technical resources	4
Established office/representation in Eastern Cape Province	4
Specific experience in Eastern Cape Province	5
General experiences in similar projects	7
Total points for experience	20

(b) Methodology

	Maximum Points
Methodology and understanding of TOR	40
Total points for Methodology	40

(c) Team Capability and Resources

	Maximum Points

The experience, qualifications and competence of the Project Leader	14
Professional Certification with Groundwater Division of GSSA and SACNASP	6
Range of equipment and availability for duration of contract	6
Team composition	14
Total points for Proposed Staff	40

It is recommended that the proposal contain at least the following sections:

- **Methodology**
- Experience
- Staff (CV's)
- List the team and their role
- Equipment
- Equity Ownership
- Company profile
- Office locations
- List the team and their role
- Previous work (last 5 years) as well as references
- Experience in similar work

Reference Standards

All works and services, sub-contracts, must be in compliance with applicable national standards, requirements and specifications and in accordance with the Occupational Health and Safety Act 85 of 1993, South Africa and Appendix 1, Minimum standards and guidelines for groundwater resource development for the community water supply and sanitation programme" (First Edition, April 1997)

Application procedures

Qualified candidates are requested to apply online and submit their proposals on bid.pretoria@undp.org by 16th October 2020.

The application should contain:

- Cover letter explaining why you are the most suitable candidate for the advertised position; and
- Brief methodological note on how the work will be undertaken. - CV demonstrating qualification and competencies, and three references - Reference standards (see 3.7)

Financial Proposal* - should be kept as a separate document and should specify a total lump sum amount for the tasks specified in this advertisement. The financial proposal must include a breakdown of this lump sum amount (number of anticipated working days and any other possible costs). *Please note that the financial proposal is all-inclusive and shall take into account various expenses incurred by the consultant during the contract period.

PHASE 1 Scientific Groundwater Assessment

ANNEXURE 1 SCHEDULE OF RATES

Item No	Description	Unit	Qty	Rate (R)	Total (R)
HGS	General Scope of Work (Standard rates) For this item and sub-items listed below the consultant will be remunerated at the tariffs applicable for professional fees, geophysical equipment and other equipment usage and the reimbursable expenses as specified in clause 4 of this document on a time and cost basis.				
HGS1	Preparation of Project Execution Plan	sch	2	-	-
HGS2	Liaison with SAWEP PCU, schools, CHDM and DRPW	sch	2	-	-
HGS5	Project progress reporting, weekly, siting data report, with graphical format of geophysical data and Locality map (depicting traverses target structures and drilling sites)	sch	2	-	-
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis				
	TOTAL RATE (excl. reimbursable expenses) for Item HGS	sch	2		R
HSS	Specific Scope of Work (price all quantities and totals) Bided Rate for personnel categories and equipment use				
HSS5	Scientific Groundwater Assessment Bided Rate for personnel categories and equipment use				
HSS5.1	Static water level less than 50 m (one priority exploration drilling site plus alternative site)				
	Personnel Category F1	Hr		1564.00	
	F2	Hr		1247.00	
	E	Day		6340.00	
	E	Hr		906.00	
	D	Day		5420.00	
	D	Hr		774.00	
	C	Hr		564.00	
	C	Day		3160.00	
	B	Hr		413.00	
	B	Day		2891.00	
	A1	Hr		303.00	
	A1	Day		2121.00	
	A2	Hr		222.00	
	A2	Day		1554.00	
	A3	Hr		163.00	
	A3	Day		952.00	
	Equipment Use Magnetometer	Day		220.00	
	Frequency domain electromagnetic system	Day		890.00	
	DC resistivity meter	Day		170.00	
	GPS	Day		55.00	
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis				
	TOTAL RATE (excl. reimbursable expenses) for Item HSS5.1	sch	2		R
Item No	Description	Unit	Qty	Rate (R)	Total (R)
HSS5.2	Static water level deeper than 50 m (one priority exploration drilling site plus alternative site)				
	Personnel Category F1	Hr		1564.00	
	F2	Hr		1247.00	
	E	Day		6340.00	
	E	Hr		906.00	
	D	Day		5420.00	

	D	Hr		774.00	
	C	Hr		564.00	
	C	Day		3160.00	
	B	Hr		413.00	
	B	Day		2891.00	
	A1	Hr		303.00	
	A1	Day		2121.00	
	A2	Hr		222.00	
	A2	Day		1554.00	
	A3	Hr		163.00	
	A3	Day		952.00	
Equipment Use	Magnetometer	Day		220.00	
	DC resistivity meter	Day		170.00	
	DC resistivity – multiple configuration	Day		1800.00	
	TDEM / CSAMT Electromagnetic systems	Day		3000.00	
	GPS	Day		55.00	
Reimbursable expenses under this item are:					
Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis					
TOTAL RATE (excl. reimbursable expenses) for Item HSS5.2		sch	2		R

ANNEXURE 2 REIMBUSRSBALE COST

	Transport (R)	S&T	Printing (R)	Copying (R)	Reports/Training manuals (R)	Laboratory testing (R)	Total (R)
HGS 1,2,5							
HSS 5							
						SUB TOTAL	
						VAT 15%	
						TOTAL REIMBURSABLE COST (R)	

ANNEXURE 3 SUMMARY OF TOTAL BID PRICE OF SCHEDULE OF RATES (ANNEXURE 1) AND REIMBURSABLE COST (ANNEXURE 2)

Item Nos.	Unit	Quantity	Total (R)
HGS 1. Preparation of Project Execution Plan	school	2	R
HGS 2 Liaison with SAWEP PCU, schools, CHDM and DRPW	school		
HGS 5 Project progress reporting weekly, Siting data report, with graphical format of geophysical data and Locality map (depicting traverses, target structures and drilling sites)	school	2	R
HSS 5 Scientific Groundwater Assessment	school	2	R
SUB TOTAL			
15% VAT			
SUB TOTAL ANNEX 2			
TOTAL BID PRICE PHASE 1			

PHASE 2 Borehole drilling & Groundwater Management

ANNEXURE 4 SCHEDULE OF RATES

Item	Description	Uni	Qty	Rate	Total
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No		t		(R)	(R)
HGS	General Scope of Work (Standard rates) For this item and sub-items listed below the consultant will be remunerated at the tariffs applicable for professional fees, geophysical equipment and other equipment usage and the reimbursable expenses as specified in clause 4 of this document on a time and cost basis.				
HGS1	Preparation of Project Execution Plan	sch	2	-	-
HGS2	Liaison with SAWEP PCU, schools, CHDM and DRPW	sch	2	-	-
HGS3	Project progress reporting	sch	2	-	-
HGS4	Administration of borehole drilling and borehole test pumping contracts	sch	2		
HGS5	Project progress reporting, weekly or as required by Employer.	sch	2		
HGS6	Submission of project borehole information to the Employer	sch	2	-	-
HGS7	Allocation of numbers to newly drilled boreholes based on the implemented unique numbering system in DWS and subsequent planting of pole with engraved allocated number as specified in Appendix 1	sch	2	-	-
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis				
	TOTAL RATE (excl. reimbursable expenses) for Item HGS		sch	2	-
Item No	Description	Unit	Qty	Rate (R)	Total (R)
HSS	Specific Scope of Work (price all quantities and totals) Bided Rate for personnel categories and equipment use				
HSS6	Supervision of drilling Bided Rate for personnel categories and equipment use				
HSS6.1	Standard Drilling				
	Personnel Category	F1	Hr	1564.00	
		F2	Hr	1247.00	
		E	Day	6340.00	
		E	Hr	906.00	
		D	Day	5420.00	
		D	Hr	774.00	
		C	Hr	564.00	
		C	Day	3160.00	
		B	Hr	413.00	
		B	Day	2891.00	
		A1	Hr	303.00	
		A1	Day	2121.00	
		A2	Hr	222.00	
		A2	Day	1554.00	
		A3	Hr	163.00	
		A3	Day	952.00	
	Equipment Use	GPS	Day	R55.00	
		Electrical conductivity meter	Day	R70.00	
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis				
	TOTAL RATE (excl. reimbursable expenses) for Item HSS6.1		bh	2	R
Item No	Description	Unit	Qty	Rate (R)	Total (R)
HSS7	Supervision of Test pumping of Newly drilled borehole Bided Rate for personnel categories and equipment use				
HSS7.1	Step draw-down test (SDT)				
	Personnel Category	F1	Hr	1564.00	

		F2	Hr		1247.00	
		E	Day		6340.00	
		E	Hr		906.00	
		D	Day		5420.00	
		D	Hr		774.00	
		C	Hr		564.00	
		C	Day		3160.00	
		B	Hr		413.00	
		B	Day		2891.00	
		A1	Hr		303.00	
		A1	Day		2121.00	
		A2	Hr		222.00	
		A2	Day		1554.00	
		A3	Hr		163.00	
		A3	Day		952.00	
	Equipment Use	GPS	Day		R55.00	
		Electrical conductivity meter	Day		R70.00	
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis TOTAL RATE (excl. reimbursable expenses) for Item HSS7.1					2
			hh			R
HSS7.2	SDT and 12 hr constant discharge test (CDT)					
	Personnel Category	F1	Hr		1564.00	
		F2	Hr		1247.00	
		E	Day		6340.00	
		E	Hr		906.00	
		D	Day		5420.00	
		D	Hr		774.00	
		C	Hr		564.00	
		C	Day		3160.00	
		B	Hr		413.00	
		B	Day		2891.00	
		A1	Hr		303.00	
		A1	Day		2121.00	
		A2	Hr		222.00	
		A2	Day		1554.00	
		A3	Hr		163.00	
		A3	Day		952.00	
	Equipment Use	GPS	Day		R55.00	
		Electrical conductivity meter	Day		R70.00	
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis TOTAL RATE (excl. reimbursable expenses) for Item HSS7.2					2
			hh			R
Item No	Description		Unit	Qty	Rate (R)	Total (R)
HSS7.3	SDT and 24 hr constant discharge test (CDT)					
	Personnel Category	F1	Hr		1564.00	
		F2	Hr		1247.00	
		E	Day		6340.00	
		E	Hr		906.00	
		D	Day		5420.00	
		D	Hr		774.00	
		C	Hr		564.00	
		C	Day		3160.00	
		B	Hr		413.00	
		B	Day		2891.00	
		A1	Hr		303.00	
		A1	Day		2121.00	
		A2	Hr		222.00	
		A2	Day		1554.00	

	A3	Hr		163.00	
	A3	Day		952.00	
Equipment Use	GPS	Day		R55.00	
	Electrical conductivity meter	Day		R70.00	
Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis					
TOTAL RATE (excl. reimbursable expenses) for Item HSS7.3		bh	2		R
HSS7.4	SDT and 48 hr constant discharge test (CDT)				
Personnel Category	F1	Hr		1564.00	
	F2	Hr		1247.00	
	E	Day		6340.00	
	E	Hr		906.00	
	D	Day		5420.00	
	D	Hr		774.00	
	C	Hr		564.00	
	C	Day		3160.00	
	B	Hr		413.00	
	B	Day		2891.00	
	A1	Hr		303.00	
	A1	Day		2121.00	
	A2	Hr		222.00	
	A2	Day		1554.00	
	A3	Hr		163.00	
	A3	Day		952.00	
Equipment Use	GPS	Day		R55.00	
	Electrical conductivity meter	Day		R70.00	
Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis					
TOTAL RATE (excl. reimbursable expenses) for Item HSS7.4		bh	2		R
Item No	Description	Unit	Qty	Rate (R)	Total (R)
HSS7.5	SDT and 72 hr constant discharge test (CDT)				
Personnel Category	F1	Hr		1564.00	
	F2	Hr		1247.00	
	E	Hr		906.00	
	D	Hr		774.00	
	C	Hr		564.00	
	B	Hr		413.00	
	B	Day		2891.00	
	A1	Hr		303.00	
	A1	Day		2121.00	
	A2	Hr		222.00	
	A2	Day		1554.00	
	A3	Hr		163.00	
	A3	Day		952.00	
Equipment Use	GPS	Day		55.00	
	Electrical conductivity meter	Day		70.00	
Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, copying and laboratory analysis					
TOTAL RATE (excl. reimbursable expenses) for Item HSS7.5		bh	2		R
HSS8	Management of groundwater schemes (quantity and quality)				
	Bided Rate for personnel categories and equipment use				
HSS8.1	Development of a groundwater management plan for 2 selected schools				
Personnel Category	F1	Hr		1564.00	
	F2	Hr		1247.00	

	E	Day		6340.00	
	E	Hr		906.00	
	D	Day		5420.00	
	D	Hr		774.00	
	C	Hr		564.00	
	C	Day		3160.00	
	B	Hr		413.00	
	B	Day		2891.00	
	A1	Hr		303.00	
	A1	Day		2121.00	
	A2	Hr		222.00	
	A2	Day		1554.00	
	A3	Hr		163.00	
	A3	Day		952.00	
	GIS Specialist (E)	Hr		906.00	
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, Copying, monitoring training material and laboratory analysis TOTAL RATE (excl. reimbursable expenses) for Item HSS8.1				R
Item No	Description	Unit	Qty	Rate (R)	Total (R)
HSS8.2	Implementation and maintenance of a groundwater management plan with selected individuals at 2 selected schools F2 E E D D C C B B A1 A1 A2 A2 A3 A3 GIS Specialist (E) Aquifer modeller + recharge specialist (E)	Hr Day Hr Day Hr Hr Day Hr Day Hr Day Hr Day Hr Day Hr Hr		1247.00 6340.00 906.00 5420.00 774.00 564.00 3160.00 413.00 2891.00 303.00 2121.00 222.00 1554.00 163.00 952.00 906.00 906.00	
	Reimbursable expenses under this item are: Transport, subsistence, facsimile transmission, printing, Copying, monitoring training material and laboratory analysis TOTAL RATE (excl. reimbursable expenses) for Item HSS8.2				R
HSS9	Technical completion report for boreholes Bided Rate for personnel categories and equipment use Personnel Category F1 F2 E D C B A1 A1 A2 A2 A3 A3	Hr Hr Hr Hr Hr Hr Day Hr Day Hr Day Hr Day		1564.00 1247.00 906.00 774.00 564.00 413.00 303.00 2121.00 222.00 1554.00 163.00 952.00	
	Reimbursable expenses under this item are: Printing, copying, report covers, binding and computer usage				

TOTAL RATE (excl. reimbursable expenses) for Item HSS9.1					
Item No	Description	Unit	Qty	Rate (R)	Total (R)
10	Consulting Fee for graphic information system (GIS) specialist (if required)	Hr			R
11	Consulting fee for aquifer modelling / groundwater recharge Specialist (if required)	Hr			R
12	Borehole drilling (if sub contract)	bh	2		R
13	Borehole test pumping (if sub contract)	bh	2		R

ANNEXURE 5 REIMBURSBABLE COST

	Transport (R)	S&T	Printing (R)	Copying (R)	Reports/Training manuals (R)	Laboratory testing (R)	Total (R)
HGS 1 to 7							
HSS 6							
HSS 7							
HSS 8.1							
HSS 8.2							
HSS 9							
10							
11							
12							
13							
SUB_TOTAL							
VAT 15%							
TOTAL REIMBURSABLE COST (R)							

ANNEXURE 6 SUMMARY OF TOTAL BID PRICE OF SCHEDULE OF RATES (ANNEXURE 4) AND REIMBURSABLE COST (ANNEXURE 5)

Item Nos.	Unit	Quantity	Total (R)
HGS 1 Preparation of Project Execution Plan	school	2	R
HGS 2 Liaison with SAWEP PCU, schools, CHDM and DRPW	school	2	R
HGS 3 Project co-ordination and Contractors site meetings	school		
HGS 4 Administration of borehole rehabilitation, drilling and borehole test pumping contracts	school	2	R
HGS 5 Project progress reporting	school	2	R
HGS 6 Submission of project borehole information to the Employer	school	2	R
HGS 7 Allocation of numbers to newly drilled boreholes based on the implemented unique numbering system in DWS and subsequent planting of pole with engraved allocated number as specified in Appendix 1	school	2	R
HSS6.1 Standard Drilling	bh	2	R
HSS7.1 Step draw-down test (SDT)	bh	2	R
HSS7.2 SDT and 12 hr constant discharge test (CDT)	bh	2	R
HSS7.3 SDT and 24 hr constant discharge test (CDT)	bh	2	R
HSS7.4 SDT and 48 hr constant discharge test (CDT)	bh	2	R
HSS7.5 SDT and 72 hr constant discharge test (CDT)	bh	2	R
HSS8.1 Development of a groundwater management plan for 2 selected schools			R
HSS8.2 Implementation and maintenance of a groundwater management plan with selected individuals at 2 selected schools			R

HSS9 Technical completion report for boreholes			R
10 Consulting Fee for graphic information system (GIS) specialist (if required)	Hr		R
11 Consulting fee for aquifer modelling / groundwater recharge Specialist (if required)	Hr		R
12 Borehole drilling (if sub contract)	bh	2	R
13 Borehole test pumping (if sub contract)	bh	2	R
SUB TOTAL			
15% VAT			
SUB TOTAL ANNEX 5			
TOTAL BID PRICE PHASE 2			

Appendix 1 Minimum standards and guidelines for groundwater resource development for the community water supply and sanitation programme" (First Edition, April 1997)

<http://www.dwa.gov.za/Groundwater/Documents/MSGsApr97a.pdf>