



KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Quotation Advert

Opening Date: 12/05/2023
Closing Date: 18/05/2023
Closing Time: 11:00

INSTITUTION DETAILS

Institution Name: Edumbe CHC
Province: KwaZulu-Natal
Department of entity: Department of Health
Division or section: Supply Chain Management
**Place where goods/
service is required:** eDumbe CHC
Date Submitted: 12/05/2023

ITEM CATEGORY AND DETAILS

Quotation number: EDU 031/23/24
Item Category: Services
Item Description: Servicing to borehole at eDumbe CHC & three clinics
Quantity (if supplies): ONCE OFF

COMPULSORY BRIEFING SESSION / SITE VISIT

Select Type: Not applicable
Date: N/a
Time: N/a
Venue: -

QUOTES CAN BE COLLECTED FROM: Downloadable from KZN HEALTH WEBSITE

QUOTES SHOULD BE DELIVERED TO: DEPOSIT IN THE TENDER OX SITUATED IN THE
TENDER BOX OR EMAIL: Edumbe.Quotations@kznhealth.gov.za

ENQUIRIES REGARDING ADVERT MAY BE DIRECTED TO:

Name: Sithembile
Email: happiness.shabalala@kznhealth.gov.za
Contact number: 060 534 4522

Finance Manager Name: Mr. S. Shandu

Finance Manage signature: 

OFFICIAL PRICE PAGE FOR QUOTATIONS OVER R2 000.01

QUOTE NUMBER: zNQ /EDU ,031 /23 /24

DESCRIPTION: SERVICE TO BOREHOLE AT EDUMBE CHC & TRHEE CLINICS

PREFERENCE POINTS WILL BE ALLOCATED ACCORDING TO THE IMPLEMENTATION OF SPECIFIC GOALS IN TERMS OF PPR 2022:	POINTS ALLOCATED
Race – Full/partial/ combination of points may be allocated to companies at least 51% Owned by Black People	20

ICN NUMBER	QUANTITY	UNIT OF MEASURE	DESCRIPTION	BRAND & MODEL	COUNTRY OF MANUFACTURE	PRICE	
						R	C
	01	UNIT	SERVICING OF BOREHOLE AT EDUMBE CHC				
	01	UNIT	LUNEBURG CLINIC				
	01	UNIT	PRINCESS MHLOSHENI CLINIC				
	01	UNIT	HARTLAND CLINIC				
			NB:				
			REQUIREMENTS:				
			CIDB 1ME/ 1EB OR ABOVE				
			EXPERIENCE ON SIMILAR WORK				
			COMPLETION CERTIFICATE				
			QUALIFIED EXPERIENCE HYDROLOGIST				
			SPECIFICATION ATTACHED				
			DOCUMENTS TO BE EMAILED TO THE				
			FOLLOWING EMAIL ONLY:				
			Edumbe.Quotations@kznhealth.gov.za				
VALUE ADDED TAX @ 15% (Only if VAT Vendor)							
TOTAL QUOTATION PRICE (VALIDITY PERIOD 60 Days)							

DOES THIS OFFER COMPLY WITH THE SPECIFICATION? YES / NO
 IS THE PRICE FIRM? YES / NO
 DOES THE ARTICLE CONFORM TO THE S.A.N.S. / S.A.B.S. SPECIFICATION? YES / NO

STATE DELIVERY PERIOD (E.G. 3 DAYS, 1 WEEK) _____

NAME OF BIDDER: _____ SIGNATURE OF BIDDER: _____
 [By signing this document, I hereby agree to all terms and conditions]

CAPACITY UNDER WHICH THIS QUOTE IS SIGNED: _____ DATE: _____

BIDDER'S DISCLOSURE

1 PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2 BIDDER'S DECLARATION

2.1. Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise, employed by the state? **YES / NO**

2.1.1. If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

FULL NAME	IDENTITY NUMBER	NAME OF STATE INSTITUTION

2.2. Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES / NO**

2.2.1. If so, furnish particulars: _____

2.3. Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES / NO**

2.3.1. If so, furnish particulars: _____

3 DECLARATION

I, the undersigned, (name) _____ in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

- 3.1. I have read and I understand the contents of this disclosure;
- 3.2. I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium² will not be construed as collusive bidding.
- 3.4. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.5. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
- 3.6. There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.7. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

NAME OF BIDDER

SIGNATURE

POSITION

DATE

¹ the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

² Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

5.6. Quotation documents must not be included in packages containing samples. Such quotations may be rejected as being invalid.

6. SAMPLES

6.1. In the case of the quote document stipulating that samples are required, the supplier will be informed in due course when samples should be provided to the institution. (This decreases the time of safety and storage risk that may be incurred by the respective institution). The bidder's sample will be retained if such bidder wins the contract.

- (i) If a company/s who has not won the quote requires their samples, they must advise the institution in writing of such.
- (ii) If samples are not collected within three months of close of quote the institution reserves the right to dispose of them at their discretion.

6.2. Samples must be made available when requested in writing or if stipulated on the document.

- If a Bidder fails to provide a sample of their product on offer for scrutiny against the set specification when requested, their offer will be rejected. All (i) testing will be for the account of the bidder.

7. COMPULSORY SITE INSPECTION / BRIEFING SESSION

7.1. Bidders who fail to attend the compulsory meeting will be disqualified from the evaluation process.

- (i) The institution has determined that a compulsory site meeting will not take place.

(ii) Date: _____ / _____ / _____ Time: _____ Place: _____

Institution Stamp:	Institution Site Inspection / briefing session Official:
	Full Name: _____
	Signature: _____
	Date: _____

8. STATEMENT OF SUPPLIES AND SERVICES

8.1. The contractor shall, when requested to do so, furnish particulars of supplies delivered or services executed. If he/she fails to do so, the Department may, without prejudice to any other rights which it may have, institute inquiries at the expense of the contractor to obtain the required particulars.

9. SUBMISSION AND COMPLETION OF SBD 6.1

9.1. Should a bidder wish to qualify for preference points they must complete a SBD 6.1 document. Failure by a bidder to provide all relevant information required, will result in such a bidder not being considered for preference point's allocation. The preferences applicable on the closing date will be utilized. Any changes after the closing date will not be considered for that particular quote.

10. TAX COMPLIANCE REQUIREMENTS

10.1. In the event that the tax compliance status has failed on CSD, it is the suppliers' responsibility to provide a SARS pin in order for the institution to validate the tax compliance status of the supplier.

10.2. In the event that the institution cannot validate the suppliers' tax clearance on SARS as well as the Central Suppliers Database, the quote will not be considered and passed over as non-compliant according to National Treasury Instruction Note 4 (a) 2016/17.

11. TAX INVOICE

11.1. A tax invoice shall be in the currency of the Republic of South Africa and shall contain the following particulars:

- (i) the name, address and registration number of the supplier;
- (ii) the name and address of the recipient;
- (iii) an individual serialized number and the date upon which the tax invoice
- (iv) a description and quantity or volume of the goods or services supplied;
- (v) the official department order number issued to the supplier;
- (vi) the value of the supply, the amount of tax charged;
- (vii) the words tax invoice in a prominent place.

12. PATENT RIGHTS

12.1. The supplier shall indemnify the KZN Department of Health (hereafter known as the purchaser) against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.

13. PENALTIES

13.1. If at any time during the contract period, the service provider is unable to perform in a timely manner, the service provider must notify the institution in writing/email of the cause of and the duration of the delay. Upon receipt of the notification, the institution should evaluate the circumstances and, if deemed necessary, the institution may extend the service provider's time for performance.

13.2. In the event of delayed performance that extends beyond the delivery period, the institution is entitled to purchase commodities of a similar quantity and quality as a substitution for the outstanding commodities, without terminating the contract, as well as return commodities delivered at a later stage at the service provider's expense.

13.3. Alternatively, the institution may elect to terminate the contract and procure the necessary commodities in order to complete the contract. In the event that the contract is terminated the institution may claim damages from the service provider in the form of a penalty. The service provider's performance should be captured on the service provider database in order to determine whether or not the service provider should be awarded any contracts in the future.

13.4. If the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance.

14. TERMINATION FOR DEFAULT

- 14.1. The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (i) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract,
 - (ii) if the supplier fails to perform any other obligation(s) under the contract; or
 - (iii) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 14.2. In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services.
- 14.3. Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
15. **THE DEPARTMENT RESERVES THE RIGHT TO PASS OVER ANY QUOTATION WHICH FAILS TO COMPLY WITH THE ABOVE.**

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

1. GENERAL CONDITIONS

- 1.1. The following preference point systems are applicable to invitations to tender:
- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
 - the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).
- 1.2. The applicable preference point system for this tender is the 80/20 preference point system.
- 1.3. Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:
- (a) Price; and
 - (b) Specific Goals.

1.4. The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and Specific Goals	100

- 1.5. Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.
- 1.6. The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

4. DEFINITIONS

- (a) "tender" means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) "price" means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) "rand value" means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) "tender for income-generating contracts" means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) "the Act" means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1. THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

$$\begin{array}{ccc}
 \text{80/20} & & \text{90/10} \\
 \text{Ps} = 80 \left(1 - \frac{\text{Pt} - \text{Pmin}}{\text{Pmin}} \right) & \text{OR} & \text{Ps} = 90 \left(1 - \frac{\text{Pt} - \text{Pmin}}{\text{Pmin}} \right)
 \end{array}$$

Where

- Ps = Points scored for price of tender under consideration
- Pt = Price of tender under consideration
- Pmin = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

$$\begin{array}{ccc}
 \text{80/20} & & \text{90/10} \\
 \text{Ps} = 80 \left(1 + \frac{\text{Pt} - \text{Pmax}}{\text{Pmax}} \right) & \text{OR} & \text{Ps} = 90 \left(1 + \frac{\text{Pt} - \text{Pmax}}{\text{Pmax}} \right)
 \end{array}$$

Where

- Ps = Points scored for price of tender under consideration
- Pt = Price of tender under consideration
- Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender.
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of--
- (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
 - (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,
- then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.
Note to tenderers: The tenderer must indicate how they claim points for each preference point system.

The specific goal/s allocated points in terms of this tender	Number of points allocated (80/20 system)	Number of points claimed (80/20 system)
Race – Full/partial/ combination of points may be allocated to companies at least 51% Owned by Black People	20	

DECLARATION WITH REGARD TO COMPANY/FIRM

- 4.3. Name of company/firm: _____
- 4.4. Company registration number: _____
- 4.5. TYPE OF COMPANY/ FIRM (tick applicable box)
- Partnership/Joint Venture / Consortium
 - One-person business/sole propriety
 - Close corporation
 - Public Company
 - Personal Liability Company (Pty) Limited
 - Non-Profit Company
 - State Owned Company

- 4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:
- i) The information furnished is true and correct;
 - ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
 - iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
 - iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: _____

DATE: _____

ADDRESS: _____



**PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF HEALTH**

**EDUMBE CHC
SERVICING OF WATER BOREHOLE PUMP AT EDUMBE CHC & CLINICS**

TECHNICAL SPECIFICATIONS

1. TECHNICAL SPECIFICATION (To be read in conjunction with plan and priced accordingly.)

1.1 GENERAL

This TECHNICAL SPECIFICATION shall be read in conjunction with all other sections of the SPECIFICATION and cognisance shall be taken of the clauses relevant to this particular installation, whether any specific clauses are referred to or not.

2. SCOPE OF WORK

2.1 Borehole Pump

- Pumping Test and Carry out 3 hour pumping test.
- Collect water samples and carry out water quality Analysis.
- Test pumping to ascertain borehole yield for at least 24 hours including installation and withdrawal of pumping unit and recovery measurements.
- Cleaning of pump and removal of sludge.
- Inspect the well walls and lining and repair as needed.
- Check the water level and deepen the well as needed.
- Check the support posts for the pulley and repair as needed.
- Record the depth of water level & depth of well with a rope scale and report attach to the report.

- Check the fittings such as nuts, bolts and handle assembly and tighten them.
- Check the axle bolt and tighten as needed.
- Make sure the lock nut is tight.
- Make sure the hand pump is firm on its base.
- Check the flange bolts fastening the water chamber to the pedestal are tight.
 - Handle is shaky.
 - Discharge is satisfactory.
 - Guide bush is excessively worn out.
 - Chain is worn out.
 - Roller chain guide is excessively worn out.
- Check all parts of the hand pump for wear and tear / damages, replace damaged parts and reassemble the hand pump.
- Measure the well depth.
- All the components of the hand pump to be checked for wear and tear/damages and damaged parts replaced and hand pump re-assembled.
- Washing and cleaning of the components of the hand pumps should be done with water and bleaching powder, if required instead of mixture of water and kerosene.
- Producing and table report by the qualified hydrologist (certified copy of qualifications to be attached)
- Water test report.

3. MINIMUM REQUIREMENTS

3.1 CIDB grading 1ME/1EB or more eligible to tender.

3.2 Experience on similar work, at least one reference/completion certificate to be submitted with bid documents.

3.3 Contractor to have the qualified and experienced hydrologist, proof of qualifications to submitted with bid documents.

BOREHOLES

The objective of an efficient operation and maintenance of a water supply system is to provide safe drinking water as per designed quality and quantity, with adequate pressure at convenient location and time at competitive cost on a sustainable basis

Annual servicing of borehole Technical Specification

The most important legislation and policy documents governing the development and operation of water services are:

- Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)
- Water Services Act, 1997 (Act 108 of 1997)
- National Water Act, 1998 (Act 36 of 1998)
- Public Finance Management Act, 1999 (Act 1 of 1999)
- Strategic Framework for Water Services, September 2003
- White Paper on Sanitation, September 2001
- Regulations under S9 of the Water Services Act, 1997
- Regulations under S10 of the Water Services Act, 1997
- Regulations under S 19 of the Water Services Act, 1997
- Model Water Services Bylaws. Section 21(1) of the Water Services Act, 1997
- Guidelines For Human Settlements Planning and Design (Red Book). Obtainable from the CSI.

1 BOREHOLE DEVELOPMENT STEPS

The hydrogeological services required during project implementation are as follows:

- **Assessment of existing groundwater sources.** This may require the test pumping of existing boreholes, rehabilitation or re-drilling of boreholes, chemical analysis of water samples from existing boreholes and an examination of documentation relating to the reliability and sustained discharge rate of existing boreholes.
- **Groundwater quality assessment.** In areas with marginal water quality, testing of newly drilled boreholes or equipped existing boreholes should not commence prior to availability of chemical analysis results of TDS, NO₃ and F.
- **Borehole yield recommendations.** Motorized borehole pumps are generally warranted only in instances where a discharge rate in excess of 0,5l/s can be maintained for a continuous pumping period of eight hours or more per day. Borehole yields must always be determined on the basis of 24 hour per day pumping.
- **Reporting.** A technical report documenting all data and information is required on completion of investigations. The project hydrogeologist is required to ensure that data requirements from the hydrogeologist and contractors are documented on appropriate data recording forms and submitted to Department of Health KZN officials.
- **Borehole pump testing.** The pump testing contractor is required to test drilled boreholes. The type of borehole test methods required include:
 - Slug Test
 - Calibration Discharge Test
 - Stepped Discharge Test
 - Constant Discharge Test
 - Recovery Test
- The rest and pumping water levels in a borehole may vary considerably during drought and above average rainfall sequences. Choice of type of borehole pumping plant must take this into account.
- The ability of the pumping plant to commence operation under the full static head conditions of the pump unit.
- The ability of the pump to start operation with the riser pipe empty.
- The level at which the pumping unit has to be placed in the borehole must be as specified by the hydrogeologist or based on reliable information known to the engineer should a hydrogeologist not be available.

2 BOREHOLE MONITORING AND OTHER EQUIPMENT

All boreholes and borehole pumping plant must be provided with equipment to monitor pump, borehole and aquifer performance. The main components required are:

- Water meters
- Hour meters

- Water level depth measuring devices –a conduit pipe (20-25mm diameter) next to the riser in the borehole through which a measuring cable can be lowered is preferred; however an electrical transducer or pressure pipe is an alternative.
- Operational equipment.

The following operational equipment is required:

- Non return valve, to prevent backflow into borehole.
- Isolating valve, to prevent backflow into the borehole. Only allowed for positive displacement pumps if a pressure relief valve is installed upstream of the valve.
- Scour valve.
- Valves placed to enable removal/replacement of meter in exceptional circumstances.
- Pressure release valve upstream of all isolating valves.
- Pressure cut out switch with manual control and pressure cut out switch with 1 to 2 hour timed reset in auto control (if electrically operated).
- Delivery pressure gauge.
- Low water level in borehole cut out relay with manual control and low water level in borehole cut out relay with 1 to 2 hr. timed reset in auto control (if electrically operated).

3. Recovery Test:

Immediately after the pump is turned off after the pumping test, start measuring water levels.
Measure Recovery until:

- Water levels recover to less than 5 % of the total drawdown during the constant discharge test.
- At least three readings taken in succession are identical.
- A time equal to the total time taken for the Constant Discharge Test has elapsed.

The **data** that needs to be collected includes:

- Data and time at commencement of Test.
- The Static Water level at the start of the test.
- The depth of the borehole.
- The distance from the borehole to observation boreholes (if applicable).
- Pump installation depth.
- Water strike depths (if known from drilling/landowner).
- Borehole diameter
- Rainfall (if it rains during the test).
- Drawdown of the water level.
- Rate of discharge (for Steps and constant Tests).
- Attached spreadsheets show measurement intervals and required info.
- Draw the graph as to form part of the report.

4. Borehole maintenance

- The life of a production well will be limited unless it is constructed in a manner which permits both, a high initial efficiency and the possibility of periodical redevelopment, and only if it is pumped at the proper design rate. Some production wells under continuous heavy pumping eventually become partially clogged. With the use of appropriate materials and with careful maintenance, a borehole may be productive for 50 years or more. Well production may decline as a response to:

- i) Lowering of water table levels;
- ii) Inefficient pump operation caused by worn, corroded or plugged parts;
- iii) Deposits of scale, corrosion products or micro-organism growth on the screens and casing;
- iv) Clogging of the screens by mud, silt or sand.

- Well maintenance and rehabilitation actions help in recovering lost production if the decline is due to any of the last three causes. As important as assessing specific capacities and water levels and drawdowns in a new well, *continuous data collection* should be a normal action when operating water supply wells in order to compile their operating history.
- By comparison of such data, collected over a period of time, it is possible to detect a loss of production efficiency and, in many cases, to determine the cause of such loss.
- With this forewarning, repair and maintenance work can be accomplished at opportune times and complete breakdowns avoided.
- Most groundwaters are only mildly corrosive, if at all; corrosion may be offset by using protective coatings or corrosion resistant materials for the screens and casing.

- Incrustation results from the deposit of extraneous material in and around the screen openings and is mainly made up of Calcium, Magnesium, Sodium, Manganese or Iron bicarbonates or sulfates; silt and clays may add to the problem as do some "iron bacteria" or "slime forming" micro-organisms.
- When a well is being pumped the pressure around it (static head) is reduced as an effect of the drawdown; water velocity is increased in the immediate vicinity of the well and carbon dioxide may be released as gas; water loses part of its ability to carry salts in solution and therefore minerals such as Iron hydroxide or Calcium and Magnesium carbonates are deposited.
- Serious mineral deposition will occur at the top of screens which are exposed to the air due to overpumping.
- Slime production by iron bacteria is a result of the life cycle of these organisms, which live in groundwater by feeding on ammonia, methane and carbon dioxide; through their metabolism iron is changed to insoluble salts thus augmenting incrustation.
- Although there is no wholly effective safeguard against incrustation or corrosion, their effects can be retarded by periodic cleaning of the wells, by installing screens with maximum possible inlet areas to reduce water velocities and by reducing pumping rates.
- Once a well falls victim to incrustation or corrosion problems it needs to be *rehabilitated* or treated by mechanical, chemical or other means (surging, blasting, hydrofracturing, etc.) to recover its lost production capacity.
- No single treatment is suitable for all wells: as it is usually difficult (if not impossible) to pull the screens to the surface to manually clean them, the most widely used method of well rehabilitation is to treat the screens and water yielding part of the aquifer with acid or other chemicals without pulling the screens and producing mechanical agitation within the well by surging (moving water back and forth through the screen openings with a piston or, sometimes with compressed air or dry ice).

NB: Contractors to report to the clinic managers and sign logbooks, job cards to be signed by clinic managers when doing the service.

WORK TO BE DONE AND SCHEDULE OF PRICES

Item	DESCRIPTION	UNIT	QTY	RATE/UNIT		TOTAL	
				R	c	R	c
	NOTE: All rates for items contained in this Schedule of Prices must be computed excluding the applicable Sales Tax. The Administration reserves the right to Negotiate prices in the Bill of Quantities.						
	INSTITUTION: EDUMBE CHC SERVICE: Annual service for borehole pumps and water tanks. All rates quoted shall be inclusive of transport and, labour and profit and crane for loading and offloading if necessary.						
	PROPRIETARY ARTICLES: All equipment and material used in this contract shall be that which is specified or other approved.						
	Borehole Pumps						
1.	Edumbe CHC, Lunenburg Clinic, Hartland Clinic and Princess Mhlosheni		4				
2.	Pumping Test and Carry out 3 hour pumping test		4				
3.	Collect water samples and carry out water quality Analysis		4				
4.	Test pumping to ascertain borehole yield for at least 24 hours including installation and withdrawal of pumping unit and recovery measurements. 1		4				
5.	Cleaning of pump and removal of sludge		4				
6.	<ul style="list-style-type: none"> • Inspect the well walls and lining and repair as needed • Check the water level and deepen the well as needed • Check the support posts for the pulley and repair as needed • Record the depth of water level & depth of well with a rope scale and report attach to the report 		4				
7.	<ul style="list-style-type: none"> Check the fittings such as nuts, bolts and handle assembly and tighten them. • Check the axle bolt and tighten as needed. • Make sure the lock nut is tight. • Make sure the hand pump is firm on its base. • Check the flange bolts fastening the water chamber to the pedestal are tight. 		4				
8.	<ul style="list-style-type: none"> Discharge is satisfactory. • Handle is shaky. • Guide bush is excessively worn out. • Chain is worn out. • Roller chain guide is excessively worn out. • Check all parts of the hand pump for wear and tear / damages, replace damaged parts and 		4				

	reassemble the hand pump. • Measure the well depth. • All the components of the hand pump to be checked for wear and tear/damages and damaged parts replaced and hand pump re-assembled. • Washing and cleaning of the components of the hand pumps should be done with water and bleaching powder, if required instead of mixture of water and kerosene.					
9.	Producing and table report by the qualified hydrologist (the certified copy of qualifications to be attached).		4			
10.	Water test report		4			
Carried To Collection Summary PS 1						R

COLLECTION SUMMARY

INSTITUTION: EDUMBE CHC AND CLINICS

NOTE:

THIS COLLECTION SUMMARY MUST BE COMPLETED IN FULL BY THE CONTRACTOR AND RETURNED TOGETHER WITH THE TENDER FORM.

Collection Summary PS 1	R		
SUB-TOTAL	R		
ADD Provision for Value Added Tax Allow 15% of SUB-TOTAL			
<u>TOTAL: CARRIED TO FORM</u>	R		

All technical enquiries to be directed to:

**Edumbe CHC
Maintenance Division
Mr S.T. Ngema
034 995 8540**

BOREHOLE PUMP TEST FORM

Attachment No. 3

Name of Site: _____
 Constituency: _____
 Chief: _____
 Borehole No.: _____
 Drilled by: _____
 Pump Tested by: _____
 Grid Ref.: _____

Ward: _____
 Province: _____
 Date: _____
 Total Depth: _____ Meters
 S.W.L. _____ Meters

Clock Time (hrs)	Elapsed time (mins)	Yield (pumping rate) litres/sec	Depth from surface to water (m)	Quality of water		Recovery level after Pumping		
				Clear	Turbid	Clock Time (hrs)	Elapsed time when pump stops (mins)	Water level (m)
	0						0	
	1						1	
	2						2	
	3						3	
	4						4	
	5						5	
	10						6	
	15						7	
	20						8	
	25						9	
	30						10	
	35						12	
	40						14	
	45						16	
	50						18	
	60						20	
	70						25	
	80						30	
	90						35	
	100						40	
	110						45	
	120						50	
	150						55	
	180						60	
	210						70	
	240						80	
	270						90	
	300						105	
	330						120	
	360							
	400							

Remarks: