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## **EAST AFRICAN STANDARD**

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**Development, maintenance and management of groundwater resources — Part 0: Glossary of terms**

**EAST AFRICAN COMMUNITY**

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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East African Community

P O Box 1096

**Arusha**

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: [eac@eachq.org](mailto:eac@eachq.org)

Web: [www.each.int](http://www.each.int)

## Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

SANS 10299-0:2003, *Development, maintenance and management of groundwater resources — Part 0: Glossary of terms*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

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ICS 01.040.13; 13.060.10

**SANS 10299-0:2003**

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## **SOUTH AFRICAN NATIONAL STANDARD**

### **Development, maintenance and management of groundwater resources**

#### **Part 0: Glossary of terms**

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1 dr lategan road groenkloof ☒ private bag x191 pretoria 0001  
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**Table of changes**

<b>Change No.</b>	<b>Date</b>	<b>Scope</b>

**Foreword**

This South African standard was approved by National Committee STANSA SC 5120.12B, *Water supply, equipment and systems – Groundwater extraction*, in accordance with procedures of Standards South Africa, in compliance with annex 3 of the WTO/TBT agreement.

SANS 10299 consists of the following parts, under the general title *Development, maintenance and management of groundwater resources*:

Part 0: *Glossary of terms.*

Part 1: *The location and siting of water boreholes.*

Part 2: *The design, construction and drilling of boreholes.*

Part 4: *Test-pumping of water boreholes.*

Part 5: *The design, selection and performance of pumping equipment for production boreholes.*

Part 6: *The installation and commissioning of pumping equipment for production boreholes.*

Part 7: *The rehabilitation of water boreholes.*

Part 8: *The management of water boreholes.*

Part 9: *The decommissioning of water boreholes.*

## **Development, maintenance and management of groundwater resources**

### **Part 0:** Glossary of terms

#### **1 Scope**

This standard covers the terms and definitions applicable to water boreholes.

#### **2 Definitions**

##### **2.1**

##### **acceptable**

acceptable to the owner, professional person, competent person or specialist

##### **2.2**

##### **agreed**

agreed in writing between the owner and the professional person, competent person, specialist, contractor or system designer, as applicable

##### **2.3**

##### **annulus**

space between the casing outer sidewall and the wall of the borehole

##### **2.4**

##### **aquifer**

geological formation, or part of a formation, or a group of formations below the surface that is capable of storing and yielding a sufficient amount of water for an intended purpose when tapped through boreholes, dug wells or springs

##### **2.4.1**

##### **confined aquifer**

aquifer that is confined by impervious layers causing the pressure at any point within the aquifer to be greater than atmospheric pressure

##### **2.4.2**

##### **unconfined aquifer**

aquifer within which the pressure at any point is equal or similar to that of atmospheric pressure

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### **2.5**

#### **bentonite**

sealing agent in the form of a colloidal clay used to form an impermeable seal where this is required as part of a borehole construction

### **2.6**

#### **borehole**

hole drilled into the earth down to any depth for the purpose of exploration or investigation of the subsurface

### **2.7**

#### **borehole head (well head)**

surface infrastructure erected on a borehole and which supports the equipment installed in the borehole

#### **2.7.1**

##### **borehole log**

record of geologic strata penetrated, drilling progress, depth, water level, sample recovery, volumes and types of materials used, and other significant information regarding the drilling and construction of a borehole

#### **2.7.2**

##### **water borehole**

any borehole drilled or excavated for the purpose of groundwater monitoring, exploration or abstraction

### **2.8**

#### **casing (screen)**

pipe of steel, PVC-u or any other suitable material which is inserted into a borehole to serve as a lining and, where necessary, to support the borehole against collapse

#### **2.8.1**

##### **casing string**

length of casing formed by joining individual sections of casings together as these are introduced into the borehole as part of the borehole construction process

#### **2.8.2**

##### **construction casing**

casing which is used to temporarily support the borehole during drilling operations

#### **2.8.3**

##### **surface casing**

casing that is used to prevent the top regolith or soil falling into the borehole to facilitate drilling of the rest of the borehole, it is also used to protect the borehole from surface-borne contaminant entering into the borehole through the regolith, and therefore forms an integral part of the sanitary seal

### **2.9**

#### **competent person**

person qualified in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), with special reference in part to "competent person" where it refers to one year's experience, regarding the use and operation of machinery. In the context of this document, the above mentioned reference is made for the purpose of "drilling operations"

**2.10**

**conduit tube**

usually PVC-u or HDPE tube with a diameter of 15 mm to 25 mm which is inserted into a borehole together with the pump, is strapped to the rising main and protrudes from the borehead so that easy access to the borehole can be gained for water level measurements

**2.11**

**contractor**

person or company contracted by means of a signed contract with the owner, to drill a borehole or install the equipment as applicable, who could be the competent person or the company employing the competent person

**2.12**

**collar**

surface opening of the borehole

**2.13**

**decommissioning**

closure of a borehole according to an acceptable methodology

**2.13.1**

**temporary decommissioning**

decommissioning of a borehole intended for future service

**2.14**

**design certificate**

schedule developed by the systems designer and that addresses all the particulars of the pumping equipment

**2.15**

**developed borehole**

borehole that has been subjected to development, in accordance with an acceptable methodology, to an efficient and clean borehole

**2.16**

**discharge rate**

volume of water per unit of time abstracted from a borehole

**2.17**

**drawdown**

difference between the static water level and the lowered water level at any point in an aquifer from which water is being abstracted

**2.18**

**drill**

machine or piece of equipment designed to penetrate (cut/grind) earth or rock formation, or both

**2.18.1**

**drilling additive**

water or air based fluid used in the drilling of a borehole to remove cuttings from the borehole, to clean and cool the drill bit, to avoid collapse of borehole, to reduce friction between the borehole wall and the drill stem and to seal the borehole

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### **2.18.2**

#### **drill cuttings**

fragments or particles of soil or rock, with or without free water, created in and removed from the borehole by the drilling process

### **2.19**

#### **formation stabilizer**

similar to gravel packing, but is normally used to stabilize fractured, loose and/or unstable semi-consolidated or consolidated strata

### **2.20**

#### **gravel packing**

sand or gravel that is smooth, uniform, clean, well rounded and siliceous, it is placed in the annulus as a filter to prevent the entry of formation material into the borehole

### **2.20.1**

#### **precast gravel pack**

preformed gravel packing used for the same purpose as and instead of gravel pack

### **2.21**

#### **groundwater**

all water held within saturated soil, rock-medium, fractures or other cavities within the ground

### **2.22**

#### **grout**

fluid mixture of cement and water that is placed in the annulus for protection against contamination

### **2.23**

#### **hydraulically up gradient**

direction opposite to the direction of groundwater movement

### **2.24**

#### **installer**

person who is responsible for the complete installation and commissioning of the borehole pumping plant and, where relevant, for the design of the pumping plant

### **2.25**

#### **location**

geographical area where the borehole is to be sited

### **2.26**

#### **methods**

technique(s) applied in the process of borehole siting

### **2.27**

#### **observation borehole**

borehole in which water level changes caused by a nearby pumping well are observed

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**2.28**

**owner**

owner of the property on which the borehole is situated, or his officially nominated representative

**2.29**

**professional person**

person suitably qualified and registered with the South African Council for Natural and Scientific Professions (SACNASP), as defined in the Natural Scientific Professions Act, 1993 (Act 106 of 1993)

**2.30**

**pumping equipment**

all the equipment, electrical and mechanical, that will, after installation, ensure the delivery to the surface of a water supply of predetermined quantity and pressure head

**2.31**

**regolith**

general term for the layer of unconsolidated (loose) material comprising weathered rock and rock fragments, soil and all other superficial deposits resting on unaltered, solid bedrock

**2.32**

**rising main**

pipe leading from the pump to ground level and through which the water is pumped (raised) to surface

**2.33**

**silt pumping**

inclusion of sand/silt in the pumped water

**2.34**

**siting**

process of applying agreed methods in selecting the optimal position of a water borehole

**2.35**

**specialist**

person who has scientific knowledge of water borehole siting

**2.36**

**systems designer**

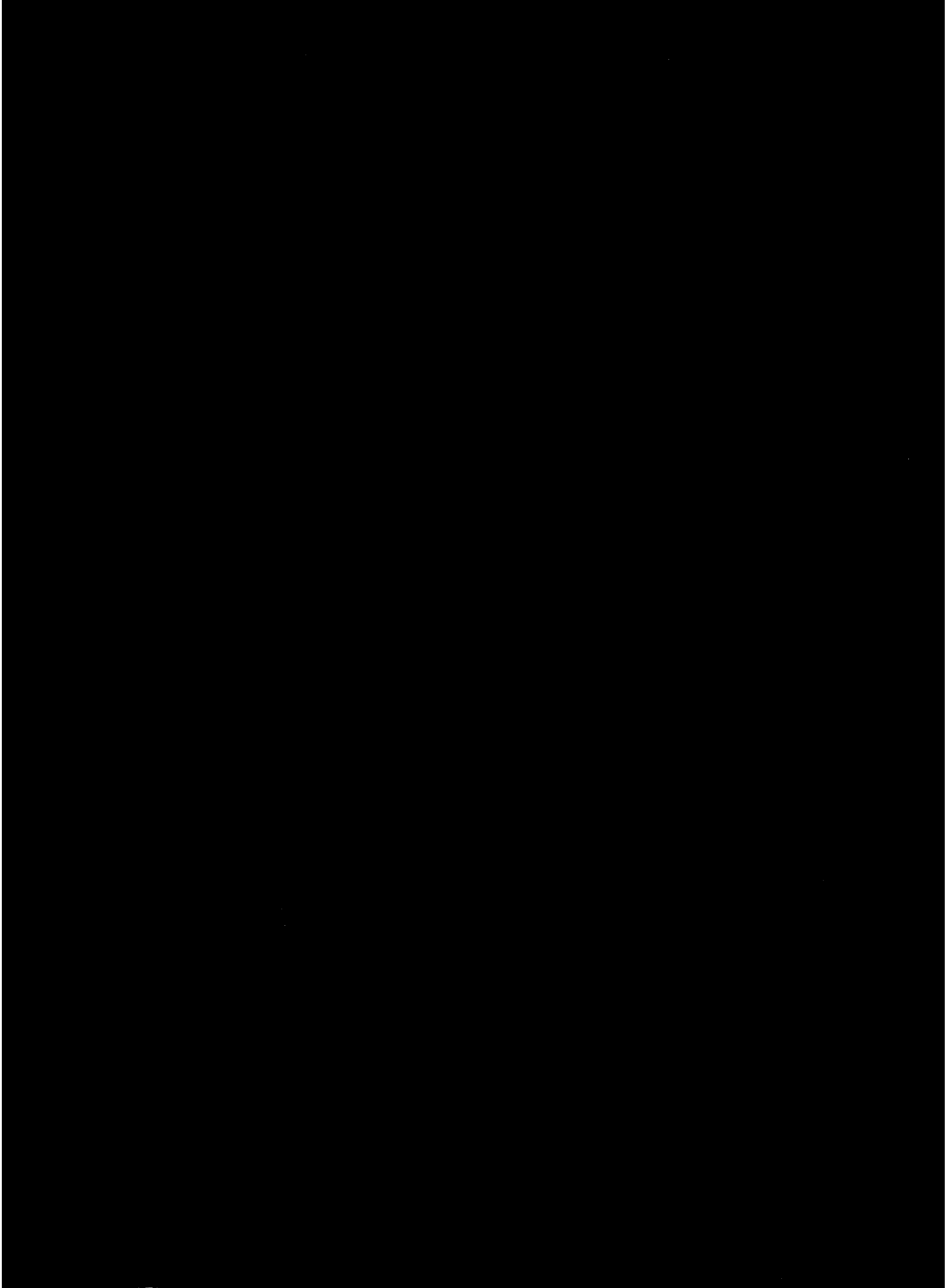
person who is responsible for the complete design of the pumping plant

NOTE In the case of a private owner, the contractor can also be the supplier and the designer of the pumping equipment

**2.37**

**yield**

volume of water per unit of time that can be obtained from a borehole



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