WATER QUALITY MANAGEMENT POLICIES AND STRATEGIES FOR SOUTH AFRICA

WATER QUALITY GLOSSARY

Report Number 1.4

FEBRUARY 2016

Inaugural report

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Water Resource Planning Systems Series

Water Quality Planning

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***This Inaugural Report serves as an initial report, used for discussion purposes, and will be updated during the Project, with the final, Edition 1 Report produced at the end of the Project.**

APPROVAL

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1. INTRODUCTION

The operating environment of water quality management is dynamic and as with most fields of science, has its own unique set of terms. Many of these terms arise from the different competencies upon which the field of WQM is based, including the various engineering competencies, chemistry, biochemistry, microbiology, zoology, botany, hdrology, geo-hyrdology, geology, physics and the social sciences to name but a few. These competencies all contribute to the rich ness of terminology which is used in the WQM field of practice.

The purpose of this report is to provide a comprehensive account of the water quality and water quality management related terminology which is used in South Africa.

This Inaugural Report is meant for discussion purposes and anyone wanting to contribute to the below glossary of WQM terms are welcome to contact the Project Manager. The intention to incorporate new terminology as it arises during the WQM Policy, Strategy and Implementation Plan development phases, with the first Edition of the Glossary due towards October 2017.

2. GLOSSARY

A

Abiotic	In the absence of living organisms.
Acid mine drainage	Effluent created by the oxidation of iron pyrite in rocks during mining operations, resulting in the production of sulphuric acid and waters that usually have a low pH value and high concentrations of iron and sulphate ions and total dissolved salts.
Algae	Any group of chiefly aquatic, non-vascular plants (i.e. without roots, stems and leaves). Typical examples are pond scums and phytoplankton.
Algal	Pertaining to algae.
Alien species	Animals and plants that invade and becoming established in areas where they do not normally occur.
Allocable water quality	The maximum worsening change in any water quality attribute away from its present value that maintains it within a pre-determined range reflecting the desired future state (typically defined by resource quality objectives). If the present value is already at or outside the pre-determined range, this indicates that none is allocable and that (a) reduced pollution loads relating that affected attribute(s), and/or (b) remediation of the resource may be necessary.

Allocable water quality	A part of a water quality management framework plan, developed as a sub-strategy of a catchment management strategy, which specifies how allocable water quality will be apportioned among water users in the water management area.
Alkalinisation	Conversion of a soil to a form that is high in sodium chloride, often with a high (alkaline) pH.
Alkaline	In an environmental context, having a pH above 8,4. In a pure chemical context, having a pH above 7.
Alkalinity	The sum of the anions of weak acids, plus hydroxyl, carbonate and bicarbonate ions in water.
Ambient standard	A quantitative pollutant level that may not be exceeded, or may be exceeded only for a specific frequency or duration, in order to ensure that the water containing such a pollutant remains fit for a designated use.
Animal husbandry	Is the management and care of farm animals by humans, which involves the further development of genetic qualities and behaviours considered to be advantageous to humans.
Anion	Negatively charged ion (atom or molecule).
Anoxic hypolimnion	In water resources, the warm surface layer is called the epilimnion, and the cooler bottom layer the hypolimnion. Under anoxic conditions, nutrients such as phosphorus and nitrogen are released from the bottom sediments to the overlying water, where they ultimately promote additional algal production, organic matter decomposition, and hypolimnetic oxygen reduction over a greater area.[1]
Anthropogenic	Generated by human activity.
Autonomous entity	An entity that is self-governing, and thus functions independently without control by others.
Aquifer	Underground accumulation of water in certain types of geological formation that is capable of transmitting groundwater rapidly enough to directly supply a borehole or spring.

B

Basic sanitation	The prescribed minimum standard of services necessary for the safe, hygienic and adequate collection, removal, disposal and purification of human excreta, domestic waste water and sewage from households including informal households.
Basic water supply	The prescribed minimum standard of water supply services necessary for a reliable supply of sufficient quantity and quality of water to households, including informal households, to support life and personal hygiene.

[1] http://www.waterencyclopedia.com/Hy-La/Lakes-Physical-Processes.html

Best practicable environmental option	Defined by the National Environmental Management Act (107:1998) as the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost that is acceptable to society, in the long-term as well as in the short-term.
Best practical means	The minimum set of decisions and management actions needed to meet the requirements of present legislation.
Biodiversity	A measure of the number and relative abundance of biological species.
Biological oxygen demand (BOD)	The amount of oxygen consumed by aerobic biological organisms (biota) in water, to break down organic material present in a given water sample at certain temperature over a specific time period. It is a measure of the portion of organic carbon that is relatively easily oxidised by micro-organisms. It is used as an indicator of dissolved organic carbon, often in conjunction with chemical oxygen demand (COD). Total organic carbon (TOC) = BOD + COD.
Biome	Large ecological region characterised by similar vegetation and climate (such as the deserts, tundra, etc.) and groupings of living organisms in it.
Biomonitoring	The monitoring of living organisms to determine the biotic integrity of the aquatic environment. Also the gathering of biological information in both the laboratory and the field for the purpose of making an assessment or decision, or determining whether or not quality objectives have been met.
Biosphere	The entire area occupied by living organisms, or favourable for their occupation, i.e. all living organisms of the earth and its atmosphere.
Biota	Animal and plant life characteristic of a region or system.
Biotic	Of or pertaining to living organisms.
Buffered	Resistant to change. Usually used in the context of pH.

C

Capacity building	The process whereby people are enabled to better perform defined functions either as individuals, through improved technical skills and/or professional understanding, or as groups aligning their activities to achieve a common purpose
Carcinogenic	Ability to cause cancer.
Catchment	The area from which rainfall will drain into the watercourse or watercourses or part of a watercourse, through surface flow to a common point or common points. The land area from which a river or reservoir is fed, also known as a drainage basin or watershed.
Catchment Management Agency (CMA)	A water management institution that is a statutory body governed by a board, representing the interests of water users, potential water users, local and government and environmental interest groups. It manages water resources within a defined water management area.

Catchment visioning	Development of a collective vision of catchment stakeholders and using it to steer diverse activities towards a common purpose.
Cation	Positively charged ion (atom or molecule).
Chemical oxygen demand (COD)	A measure of the oxygen requirement of organic matter in water. It is used as an indicator of dissolved organic carbon, often in conjunction with biological oxygen demand (BOD). Total organic carbon (TOC) = COD + BOD.
Class	Protection and management class of a water resource as determined by the classification system (Section 13 of the NWA). Preliminary class is a class that has not yet been Gazetted.
Classification system	Method of classifying South Africa's water resources to assist in water use allocation and management on a sustainable basis.
Cleaner production	A comprehensive preventive approach to environmental protection, including conservation; elimination of toxic and dangerous raw materials and product constituents, and reduction at source of the quantity and toxicity of all emissions and wastes being emitted to air, land and water.
Coastal zone	The area of land and sea along the coast, including estuaries, onshore areas and offshore areas; wherever they form an integral part of the coastal system.
Compliance monitoring programme	A monitoring programme designed to measure, assess and report on a regular basis the degree to which individual water users are remaining within (*i.e.* complying with) the conditions defined in their water use authorisations (licences).
Compulsory licensing	Compulsory licensing will apply if: it is desirable that water use in respect of one or more water resources within a specific geographic area be licensed; to achieve a fair allocation of water from a stressed water resource; when it is necessary to review prevailing water use to achieve equity in allocations; to promote beneficial use of water in the public interest; to facilitate efficient management of the water resource and to protect water resource quality.
Conductivity	The ability of water to conduct an electrical current. This depends on the number of ions in solution and is a measure of the total quantity of salts dissolved in the water. It is also used as a measure of salinity.
Conservation (water)	The efficient use and saving of water achieved through measures such as water saving devices, water-efficient processes, water demand management and water rationing.
Conservation (resource)	The protection of the aquatic ecosystem so that it is able to provide a desired range of ecosystem goods and services (including water) to society.
Co-operative governance	The sum of the many ways that individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal

	agreements that people and institutions either have agreed to or perceive to be in their interest.
Co-regulation	An interactive relationship between the regulator and the regulated. Normally, the public authorities (regulator) will prescribe the environmental objectives, while the regulated industry will choose the methods to achieve the objectives.
Cost benefit analysis	Estimate and comparison of short-term and long-term costs (losses) and benefits (gains); an economic analysis of an undertaking, often involving the conversion of all positive and negative aspects into common units (*e.g.* money), so that the total benefits and the total costs can be compared.
Cultural resources	Natural features and features adapted and created by humans in the past and present. These features are the result of continuing human cultural activity and reflect a range of community values.
Cumulative effects	The combined effects of multiple actions.

D

Decision-making	An intellectual activity comprising the making of a rational choice between alternatives.
Degradation	Reduction in quality.
Desertification	Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities.
Dissolved solids	Inorganic salts dissolved in water.
Drainage basin	A geographical area determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus. A shared drainage basin extends of two or more administrative areas.
Duty of care principle	Every person or organisation has a duty to act with due care to avoid damage to others, or to the environment.

E

Ecological succession	Manner in which ecosystems evolve and become more complex over time. This involves a change in species composition from a few early colonising pioneer species towards a more complex climax community of species.
Ecoregion	Relatively large area of land and water that contains geographically distinct assemblages of natural communities.
Ecosystem	An ecosystem consists of plants, animals and microorganisms that live in biological communities and which interact with each other and with the physical and chemical environment, with adjacent ecosystems and with the water cycle and the atmosphere (Odum, 1989).

Effluent	Liquid waste generated by human activity.
Effluent standards	Generic (*i.e.* not site-specific) values of water quality variables that can be used for end-of-pipe licence conditions.
Effluent targets	Site-specific values of water quality variables that can be used for end-of-pipe license conditions, typically back-calculated from downstream RWQOs or RQOs.
Environmental audit	A regular formal examination to ascertain whether or not an organisation or facility is operating in terms of its environmental performance requirements or some other measure of performance.
Environmental economics	Environmental economics includes the real and potential monetary costs and benefits to human well-being and the well-being of the biosphere as a whole, plus the sustainability of the system, when studying the flow of money in the economy.
Environmental impact assessment (EIA)	A detailed study of the environmental (social, economic and biophysical) consequences of a proposed course of action.
Environmental management programme (EMP)	In terms of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) every mine must submit an EMP to the Department of Minerals and Energy. An EMP contains elements of environmental assessment (see EIA) plus management plans. Once it has been approved, it is enforceable by law.
Environmental management system (EMS)	Documented procedures drawn up as described in an SABS Code of Practice to implement the requirements of 1S0 14000. Operating, emergency, data collection and documentation procedures are set out along with procedures for training, the transfer of information and all procedures of a complete management and quality control system.
Environmental sustainability	The ability of an activity to continue indefinitely at current and projected levels, without depleting the social, cultural and natural resources required to meet present and future needs.
Environmental values	Particular values related to the water resource that are conducive to public and/or environmental benefit/use, welfare, safety or health and that require protection from the effects of impaired water quality. Several environmental values may be designated for a particular water resource.
Equality	As defined in Section 9 of the Constitution, equality implies that decisions regarding water resources may not discriminate on the basis of race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language or country of birth.
Equitable	Fair and just in the sense of being based on laws and accepted principles.
Equity	The quality of being equitable.
Estuary	A partially or fully enclosed body of water, which is open to the sea permanently or periodically, and within which the seawater can be

	diluted to an extent that is measurable with fresh water drained from land.
Eutrophic	A state of an aquatic ecosystem rich in nutrients, very productive in terms of aquatic animal and plant life and exhibiting increasing signs of water quality problems.
Eutrophication	The process whereby nutrients accumulate in a body of water to the extent that problems occur with macrophyte, algal and cyanobacterial growth.
Existing lawful use	Rightful use of water as defined in Section 32 of the National Water Act, (Act No. 36 of 1998).
Externality	The impact (mainly negative) of changed environmental conditions on people and/or systems that do not cause the change.

F

Faecal coliforms	Bacteria derived from the intestines of warm-blooded animals, including man. Used as an indicator of faecal pollution.
Fauna	The animal life of a region.
Fitness for use	A scientific judgement, involving objective evaluation of available evidence, of how suitable the quality of water is for its intended use or for protecting the health of aquatic ecosystems.
Floodplain	Low-gradient land onto which a river regularly overflows its banks.

G

General authorisation	Authorisation that replaces the need for a water user to apply for a licence in terms of the National Water Act (36: 1998).
General waste	Waste that does not pose an immediate threat to man or to the environment.
Gross Domestic Product (GDP)	Total value of final production of goods and services within a specific time frame (usually one year).

H

Habitat	The normal abode or locality of a living organism defined by the set of physical, chemical and biological features.
Half-life	The time required for one half of a quantity to undergo change. In radioactivity, this is the period of time in which 50% of an element's atoms decay and become transformed into other substances. The longer the half-life of an element, the lower is its specific activity.
Hazardous waste	Waste, including radioactive waste, which is legally defined as "hazardous" in the state in which it is generated. The definition is based on the chemical reactivity or toxic, explosive, corrosive or other characteristics, which cause, or are likely to cause, danger to health or to the environment, whether by itself or when in contact

	with other waste.
Heavy metals	A metallic element with atomic number greater than 20 (*i.e.* that of calcium). Many can be toxic.
Hydrological	Pertaining to water flow.
Hydrological cycles	The cyclical flow of water, from rainfall to rivers, to evaporation and cloud formation.
Hydrosphere	The area of occurrence, distribution and movement of water on and under the land surface.
Hypersaline	Containing excessive quantities of salts.
Hypertrophic	Containing excessive quantities of nutrients.

I

Indigenous	Born, growing, or produced naturally (native) in an area, region, or country.
Industrial	Resource use patterns linked to or influenced by commercial / industrial benefits.
Informal settlement	A small or large group of houses (often of a temporary nature) erected on land, of which the majority have not formally been proclaimed and serviced for residential use.
In-stream habitat	Includes the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse.
Integrated catchment management (ICM)	A systems approach to the management of natural resources, particularly water resources, within the bounds of a geographical unit based on the catchment area of a river system.
Integrated environmental management (IEM)	A philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development process, in order to achieve a desirable balance between conservation and development.
Integrated water resource management (IWRM)	Philosophy of managing the water resources of a catchment in an integrated manner. It relies on the recognition that all components of the hydrological cycle are intimately linked, and each component is affected by changes in other components. It is inherent in the concept of ICM.
Inter-basin transfer	The conveyance of water across a drainage or river basin divide into another river basin or catchment. Also called trans-basin diversion.
Intergovernmental	Involving different spheres of government or different government agencies in the same sphere of government within a country. Also used to describe interactions between the governments of different countries.
Internalisation of externalities	Externalities, also called external costs, spill-overs or social costs, are costs generated by a producer but paid for by someone else. A typical example is a water user that discharges polluted water into a stream. The downstream user may then need to treat the water

	before it can be used. This treatment in effect means that the downstream user is paying part of the production costs of the upstream user. Internalising these externalities means the polluter should be responsible for these costs.

L

Landfill	Commonly used method of solid waste disposal.
Leachate	Liquid that flows through and out of a landfill.

M

Macroeconomics	A study of national economic aggregates.
Macrophyte	A large plant able to be seen by the naked eye, especially one associated with an aquatic habitat.
Management approaches	General courses of action, including formal regulatory command-and-control methods and self-regulatory and supportive mechanisms, which enable a strategy to be implemented.
Management instruments	Detailed procedures, guidelines and software decision support that enable a strategy to be implemented.
Mean annual runoff (MAR)	The average total volume of stream discharge, consisting of surface flows and sub-surface flows derived from rainfall onto the catchment surface within one year, which can theoretically be utilised. Usually expressed in cubic metres of water per year.
Metabolite	Product of metabolism, and which may be taken in from the environment (e.g. amino acids and vitamins).
Metal	An element that is a good conductor of electricity and whose electrical resistance is directly proportional to absolute temperature.
Microbial contamination	Contamination by micro-organisms, some of which may be pathogenic (disease causing).
Micro-organisms	Microscopic biological organisms such as bacteria, viruses, protozoa, etc., some of which cause diseases.
Minimum requirements	A regulation or standard set by the Department that specifies the very least that should be complied with.
Minister	The Minister of the Department of Water and Sanitation
Monitoring	The measurement, assessment and reporting of selected properties of water resources in a manner that is focussed on well-defined objectives. These monitoring objectives should also be clearly linked to water resource management objectives.
Monitoring design	The definition of all aspects necessary for successful implementation of a monitoring programme. These include the monitoring variables, sampling site selection, sampling methods, sampling frequency, analytical procedures, data assessment, reporting formats, etc.
Mutagenic	Causing damage or change to the genetic material of an organism or

cell.

N

Non-point source	A source of pollution whose initial impact on a water resource occurs over a wide area or long river reach (such as un-channelled surface runoff from agricultural land or a dense settlement).
Non-renewable resource	Resource that either cannot be renewed once it is used or lost.
Nutrient	Substance that supports growth and reproduction. In aquatic biology, the most important nutrients are nitrogen, phosphorus, silica and carbon.
Nutrient depletion	Reduction of essential nutrients (through plant uptake and removal of plant and animal residues.

O

Opportunity cost	The cost of foregoing one activity for another.
Over-exploitation	Use of an environmental resource at a rate that exceeds the natural regeneration rate.

P

Pan	A small closed basin that temporarily filled with water, generally a feature of semi-arid areas of low relief.
Particulate	Containing solid particles.
Per capita consumption	The amount of a commodity used by each person.
Perennial rivers	Rivers that flow throughout the year.
Performance monitoring programme	A monitoring programme designed to measure, assess and report on a regular basis the degree to which present resource quality conforms to resource quality objectives (RQOs), and hence whether a water resource is within its designated management class, or improving towards it or deteriorating away from it.
pH	The negative base 10 logarithm of the hydrogen ion activity (pH = 7 is neutral; pH < 7 is acid; pH > 7 is alkaline.
Phytoplankton	Plant plankton, (usually microscopic), found floating in a water body.
Point source	A source of pollution whose initial impact on a water resource is at a well-defined local point (such as a pipe or canal).
Policy	Guidance for decision-making and action that helps to set priorities and hence allocate human and financial resources.
Pollution	Defined by the National Water Act as the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it:

	Less fit for any optimal water use for which it may reasonably be expected to be used, or Harmful or potentially harmful to (a) the welfare, health or safety of human beings, (b) any aquatic or non-aquatic organisms, (c) the resource quality, or (d) to property.
Polluter-pays principle	The principle that those responsible for environmental damage must pay the repair costs, both to the environment and to human health, and must also pay the costs of preventive measures to reduce or prevent further pollution and environmental damage.
Pollution prevention	Control of the handling and discharge or disposal of hazardous substances, such that the degradation or further degradation of water resources is avoided.
Precautionary principle	An approach that exercises caution when uncertainties exist, generally assuming a worst-case scenario.
Precipitation	Condensation from the atmosphere, falling as rainfall, snow, hail or sleet.
Preliminary classification	An interim classification of a water resource established in the absence of the formal classification system required by Section 12 of the National Water Act. A preliminary classification is permitted in terms of Section 14.
Preliminary resource quality objective's	An interim resource quality objective established in the absence of the formal classification system required by Section 12 of the National Water Act. Preliminary resources quality objectives are permitted in terms of Section 14.
Principle	A statement providing guidance on what should be strived for, typically acknowledging an underlying values-based assumption.
Protection (water resource)	The maintenance and improvement of the integrity of water resources including their water quality, so as to regain or sustain their capacity to provide goods and services.

Q

Quality assurance	The implementation of all activities that minimise the possibility of quality problems occurring. These activities include (amongst others) training, defined sets of procedures, formal review processes, etc.
Quality control	The process of ensuring that recommended procedures are followed correctly by detecting and correcting quality problems when they arise.
Quality of life	Physical, psychological, social, cultural, religious and material wellbeing.

R

Radioactivity The spontaneous decay of an atomic nucleus (especially of elements with a high number of protons in it) by emitting either electromagnetic radiation (gamma-radiation) or high energy particles (protons: alpha radiation, electrons: beta radiation).

Redress To put right by compensation. In the current context, to redress is to explicitly favour persons that were subject to past discriminatory practices. It contradicts explicitly the principle of equality. It is, nevertheless, constitutional (Section 9(2)).

Remediation Direct intervention in (a) degraded land, to minimise contamination risk to a water resource, or (b) a degraded water resource, to maintain or improve water quality in the water resource.

Renewable resource A resource produced as part of the functioning of natural systems at rates that are comparable to its rate of consumption. Limits to renewable resources are determined by flow rates and such resources can provide a sustained yield.

Reserve Defined by the National Water Act as the quantity and quality of water required:

- To satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act (Act No. 108 of 1997), for people who are now or who will in the reasonably near future, be (a) relying upon, (b) taking water from, or (c) being supplied from, the relevant water source; and
- To protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.

Since the Reserve is a legally binding quantity, it is typically not subject to rivalry. However, its very nature creates excludability since water uses not encompassed by basic human needs and maintaining aquatic ecosystem health are explicitly excluded. Therefore, the Reserve is strictly a quasi-public good.

Resource quality Includes all aspects of water quantity, water quality and aquatic ecosystem quality, the latter including the quality of in-stream and riparian habitats and aquatic biota.

Resource Quality Objectives (RQOs) Numeric or descriptive (narrative) goals for resource quality within which a water resource must be managed. These are given legal status by being published in a Government Gazette.

Resource Directed Measures (RDM) Resource directed measures set the goals for resource protection and are informed by the Water Resource Classification system, which allows for different levels of protection for different water resources. The RDMs also make provision for the “Reserve”, defined as the quantity and quality of water required to maintain a healthy aquatic ecosystems, whilst meeting the basic human requirements.

Resource-directed water quality management An approach to water quality management that takes into account the ecosystem requirements of the water resource, whilst still

	providing for the needs of other water users.
Resource Water Quality Objectives (RWQOs)	Numeric or descriptive (narrative) in-stream (or in-aquifer) water quality objectives typically set a finer resolution (spatial or temporal) than RQOs that provide greater detail upon which to base management of water quality.
Riparian	Referring to or relating to areas adjacent to water or influenced by free water associated with streams or rivers on geologic surfaces occupying the lowest position in a catchment.
Risk assessment (risk-based decision making)	A process of gathering data and making assumptions to estimate short- and long-tern harmful effects on human health or the environment from exposure to hazards associated with the use of a particular product or technology; or establishing the probability of an event occurring, the factors that could bring about that event, likely exposure levels and the acceptability of the impact resulting from exposure.
Runoff	The total stream discharge of water, including both surface and subsurface flow, usually expressed in cubic metres of water yield.

S

Salinisation	Increase in the amount of inorganic salts or dissolved solids in the water.
Salinity	The amount of dissolved inorganic solids, or salts, in the water.
Schedule 1 use	A permissible use of water as described in Schedule 1 of the National Water Act.
Sedimentation	Sedimentation refers to the erosion, wash-off and silt load carried by streams and rivers and typically reflects the natural geophysical and hydrological characteristics of the upstream catchment.
Self-regulation	Method of environmental regulation, whereby business voluntarily chooses both the environmental target and the provisions of accomplishing compliance.
Single source intervention	The act of intervening in the impacts or requirements of a single pollution source.
Sodification	Increase in the amount of sodium salts in the water.
Source Directed Measures (SDM)	Source-based measures including pollution prevention and minimisation for managing water quality.
Source-directed water quality management	Management of water quality using source-based measures including pollution prevention and minimisation.
Source Management Objectives	Objectives relating to (a) incremental reduction, (b) maintenance or, under special circumstances, (c) incremental increase, in pollution loads, calculated to give effect to resource water quality objectives. They refer to the water resource management unit as a whole, not to specific water users, though they do consider technical, economic and administrative realities.

Stakeholder	An individual, group or organisation that has an interest in, or is affected by, an initiative and who may therefore affect the outcome of an initiative.
Standard methodology	Widely accepted, well-defined and tested scientific method, often used in chemical analysis.
Stewardship	The responsible provision of supervision and guidance.
Strategic use	A water use (such as electricity generation) of strategic national importance, as defined in the National Water Resource Strategy or designated as such by the Minister.
Strategy	Broad course of action focussed on the implementation of a policy.
Stress, water quality	A state in which the water quality is inadequate for the desired water use. For many uses, water quality stress exists when there is no allocable water quality.
Stressed water resource	A water resource for which the demand for benefits exceeds the supply. This can apply either to the quantity of water or to the allocable water quality.
Subsidiarity	The process of devolving decision making down to the lowest possible appropriate level.
Suspended solids	Particles suspended in the water column.
Sustainability indicator	An indicator conveying information about progress towards sustainable development.
Sustainable development	The endeavour to ensure that future generations can meet their own needs while promoting socio-economic development and improved quality of life for all in the current generation. This should be done in a manner that uses water resources in general, and water quality in particular, within the ability of the ecosystems to satisfy such needs now and in the future.

T

Teratogenic	Capable of causing the formation of congenital abnormalities and monstrosities in embryos.
Terrestrial ecosystem	A system of plants, animals, nutrients and elements, and the interactions between them that is found on the land.
Tolerance limits	The limit to which a plant or animal can withstand changes in the environment (*e.g.* the maximum amount of pollution that a plant can withstand, and still grow in that area).
Total dissolved solids (TDS)	Total amount of inorganic salts dissolved in water. TDS is directly proportional to electrical conductivity of water.
Total suspended particulate matter	The total amount of particulates of all sizes suspended in water.
Toxic	Poisonous.
Toxicant	A chemical substance capable of causing a toxic effect.

Toxic effect	A dose-related effect that is manifest as an impairment of the activity of the organism or the cellular or sub-cellular system. In the current context, these effects are also limited to those that can be detected, either currently or potentially, locally or internationally, by a "toxicity test", as defined here.
Toxicity	In the current context, the degree to which a water exhibits toxic effects.
Trace metals	Metallic elements that are essential for growth but only in very small quantities.
Transboundary basin	A basin that transverses two or more administrative boundaries (such as states or countries).

U

Unbuffered	Not resistant to change.
Uniform Effluent Standards	Standards set to regulate the discharge of point sources of pollution by enforcing compliance with effluent quality standards. Often leads to a cumulative pollution effect.
Urban	Built up area.
Urbanisation	The process by which an increasing proportion of an area's population becomes concentrated in (legally or statistically defined) urban areas.

V

Volatile organic compounds	Carbon compounds that evaporate at everyday temperatures.
Vulnerability	Susceptibility to harm.

W

Waste	Defined by the National Water Act as including any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted.
Water allocation	The apportionment of water or allocable water quality among water users.
Water Board	Government-owned Water Boards play a key role in South African water sector. They operate dams, bulk water supply infrastructure, some retail infrastructure and some wastewater systems. Some also provide technical assistance to municipalities. Through their role in the operation of dams they also play an important role in water resource management. The water boards report to the Department

	of Water and Sanitation. There are 15 Water Boards in South Africa. The three Largest Water Boards-Rand Water in Gauteng Province, Umgeni Water in Kwazulu Natal Province and Overberg Water.[2]
Water management area (WMA)	An area established as a management unit in the national water resource strategy, within which a catchment management agency will conduct the protection, use, development, conservation, management and control of all water resources.
Water Management Institution	Defined by the National Water Act as a catchment management agency, a water user association, a body responsible for international water management or any person who fulfils the functions of a water management institution in terms of the Act.
Water quality	The physical, chemical, radiological, toxicological, biological and aesthetic properties of water that (1) determine its fitness for use, or (2) that are necessary for protecting the health of aquatic ecosystems. Water quality is therefore reflected in (a) concentrations of substances (either dissolved or suspended), (b) physico-chemical attributes (*e.g.* temperature), (c) levels of radioactivity, and (d) biological responses to those concentrations, physico-chemical attributes, or radioactivity.
Water quality management plans	Specification of management actions, responsibilities, resources and time frames to achieve the stated resource quality objectives.
Water quality standard	A rule establishing, for regulatory purposes, the limit of some unnatural alteration in water quality that is permitted or accepted as being compatible with some particular intended use or uses of water.
Water resource	Defined by the National Water Act as including a watercourse, surface water, estuary or aquifer.
Water use	According to the National Water Act (Act No. 36 of 1998) water uses include: taking water from a water resource and storing water; conducting activities that reduce stream flow; waste discharge and disposal; controlled activities (activities which could impact detrimentally on the water resource); altering the size or position of a water course; removing water found underground for certain purposes; and recreational use.
Water use licence	Enabling tool for existing or prospective water users to gain formal access to water for productive or beneficial purposes.
Watercourse	Defined by the National Water Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which, or from which, water flows, and any collection of water that the Minister may declare to be a watercourse. Furthermore, reference to a watercourse includes, where relevant, its bed and banks.
Waterlogging	Waterlogging occurs whenever the soil is so wet that there is insufficient oxygen in the pore space for plant roots to be able to adequately respire.[3]

[2] https://www.dws.gov.za/io/wsi.aspx

Wetlands

Areas of land that are periodically or permanently waterlogged such as vleis, bogs, mires, dolomitic eyes and pans. Wetlands are usually distinguishable from terrestrial (dryland) areas by the characteristics of their soils and the water-dependent plants that grow there.

[3] http://soilquality.org.au/factsheets/waterlogging