



Annual Report to the GSSA 2016/17

from Period May 2016 to May 2017



THE GROUND WATER DIVISION SPECIALIST DIVISION OF THE GEOLOGICAL SOCIETY OF SOUTH AFRICA

Professionals for the responsible management and development of groundwater

QUALITY | SUPPLY | MANAGEMENT | SUSTAINABILITY

The Ground Water Division aims to serve the groundwater community in southern Africa, for the advancement of the science and technology of groundwater, and to promote the efficient use of groundwater and professionalism throughout the groundwater industry.

Message from the 2016/17 GWD Executive Committee

A lot has been happening in the groundwater fraternity during the past year. As a country South Africa is dealing with the aftermath of a serious drought while we, as a profession, are once again directing our focus towards sustainable groundwater supply as a viable source of drinking water.

In the GWD, a lot has been happening behind the curtains. Probably the most effort of our term as committee has been devoted to issues of what defines professionalism and competence in groundwater science, and on how we can be significantly more visible as the hub of groundwater knowledge. As part of this, we have endeavored to always henceforth incorporate the South African National Chapter of the International Association of Hydrogeologists (IAH) in our activities while providing our membership with the most affordable possible membership rates. We do, however, always encourage members to join to international societies; not just as academics, but as groundwater professionals in contact with the world.

Professionalism, competence and continuing development

The recent challenges with the drought and the implementation of the continuing professional development (CPD) system of SACNASP have once again highlighted what we have known for long: that, despite being a close-knit community, our profession is not entirely as cohesive as it should be. Responses with respect to a recent "State of Groundwater in South Africa" questionnaire posed to the membership are consistent and in agreement: who governs our competence; what are the minimum academic and vocational criteria in assessing professional competence; and what is the value of compliance to SACNASP?

In addressing this, the first step was to acknowledge a professional membership category. This was voted in

by the membership early in 2017 and the constitution has been amended accordingly. All historical professionally registered SACNASP members were automatically upgraded to professional GWD members, while new members will be upgraded on professional SACNASP registration.

Following this, a code of practice (CoP) is in preparation for finalisation at the 2017 GWD Conference and Exhibition. In order to comply with the SACNASP Act, the CoP mainly abides with the SACNASP CoP and that of the Geological Society of South Africa (GSSA), of which the GWD is a division. While SACNASP assesses compliance in terms of the SA Qualifications Authority (SAQA) qualification and the vocational experience supported by referees, the GWD provides for a wide range of vocational expertise in hydraulics, geochemistry and pollution, and management and governance.

The SACNASP CPD system went live on 1 April 2017, providing a five-year cycle for all registered members ending on 31 March 2022. During this period, each professional member has to submit proof of the required points to their CPD portfolios. The GWD has systematically started registering all its courses, lectures and programmes for CPD accreditation at fairly low prices, hoping to relieve the financial burden of attendance while still providing our membership with relevant training. We do, however, encourage our membership to broaden their horizons by attending accredited courses outside of their specific disciplines; the SACNASP system allows fairly easy navigation through all courses offered by the various voluntary organisations.

We also encourage our members to ensure that courses being attended are accredited by either SACNASP or the GSSA and not to fall victim to expensive courses registered by other professional bodies that will not contribute to your own CPD portfolios. Rather query with us; we will confirm whether such courses are valid with SACNASP. If enough interest is shown in

a course accredited by another body (such as the Engineering Council of South Africa, ECSA), the GWD will try, where possible, to support our members by validating the course materials with SACNASP as well.

The GWD supports professional conduct and ethics. We request our members to comply with the SACNASP Act and the codes of conducts available. We cannot possibly expect industry to see us as a professional discipline if we are not at least in agreement and compliance with the available legal requirements. As a profession, there exist certain acceptable standards of practice and we should all ensure to comply with these.

Branches and executive committee

We are happy to announce that the establishment of a Gauteng Branch was voted in by the membership in January 2017. Election of the first Gauteng Chair will occur together with the election of the new branch chairs and national executive committee (ExCo) for 2018/19 during the conference to be held in Cape Town in October 2017.

Nomination forms will be sent out during July. Nominees nominated twice or more will be considered seconded and acceptance will be confirmed by means of email. Voting for branch chairs and national ExCo will be by means of ballot during the conference, or electronically for members not attending. National ExCo nominees may be from any branch in South Africa, but no nominee may simultaneously stand for election to both the ExCo and a branch.

The new ExCo chair and other three ExCo members will be announced together with the new branch chairs during the closing ceremony of the conference. The new ExCo will divide responsibilities of vice chair, treasurer and secretary internally. The composition of the new ExCo, as per updated constitution, then incorporates the four elected positions and the branch chairs.

EXECUTIVE COMMITTEE

The Executive Committee of the Division consists of a Chair, a Vice Chair, a Secretary, a Treasurer and two (2) additional members

The duties of the Executive Committee are to manage the affairs of the Division in the interest of the Members of the Division and in accordance with its own Constitution and Rules and the Constitution and Bylaws of the Geological Society of South Africa.

Elected Executive Committee Members

2016/2017:

Dr Matthys Dippenaar (University of Pretoria) - National Chairperson

Mr Sechaba Lenong (Council for Geosciences) – National Vice-Chair, Website Portfolio

Mr Fortress Netili (Global Water Management Solutions Pty Ltd) - National Treasurer

Dr Martin Holland (Delta-H Water Systems Modelling Pty Ltd) – National Secretariat, Financial Portfolio

Ms Elanda Schaffner – Appointed National Secretary

Dr Jaco Nel (GCS-SA) – SACNASP and Membership Portfolio

Mr Derek Whitfield (EDRS) – Events Portfolio

Mr Terry Harck (Solution-H+) – Strategic relationships Co-Opted

Ex-officio:

Ms Danita Hohne (Department Water and Sanitation) - Central Branch Chair

Dr Roger Parsons (Parsons and Associates) - Western Cape Branch Chair

Mr Jan Myburgh (AGES) - Eastern Cape Branch Chair

Mr Duncan Munyai (Private Consultant) - GWD Limpopo Branch Chair

In 2016, the GWD introduced a newly instituted KwaZulu-Natal branch and elected Mr Mark Schapers (JG Afrika) as its first branch chair.

MEMBERSHIP

The Division strategically focused on **student** and **individual** membership. To be able to filter groundwater expertise more efficiently the GWD membership were invited to upgrade their current Ordinary (changed from Associate) membership to Professional membership.

Professional members are professionals active in a groundwater specific field and SACNASP registered. 140 members upgraded from ordinary to professional members. In total, the GWD membership database grew from 661 (2015), 727 (2016) to 781 in 2017. Of these members, 130 settled their membership dues to date.

Student membership is in coordination with the IAH ECHN and the newly elected student and early career representative is Ms Kelley Swana.

The GWD introduced a minimal Student membership fee in 2016 (R57.00). Uptake from Student members has been slow but a concerted effort to increase paid-up student membership is an ongoing priority.

BRANCH/MEMBERSHIP STATUS – MAY 2017

The Central Branch of Ground Water Division incorporates members from the Free State, Northern Cape and North West Provinces. The Eastern Cape Branch of the Ground Water Division incorporates members from the Eastern Cape.

The KwaZulu-Natal Branch of the Ground Water Division incorporates members from this region.

The Limpopo Branch of the Ground Water Division, through continuous marketing efforts, endeavor to grow their membership in this Polokwane-based branch.

The newly incorporated Gauteng Branch of the Ground Water Division will incorporate members previously sorted under the National Branch and include members from Gauteng and Mpumalanga.

The Western Cape Branch incorporates members from this region.

	Central	Ecape	KZN	Polokwane	Gauteng	Wcape	Total GWD
Total DB	94	86	24	22	400	155	781
Professional	8	5	6	2	20	23	64
Ordinary	3	3	5	0	16	13	40
Student	4	3	1	1	4	3	16
Honorary	3	0	0	0	6	1	10
May 2017	18	11	12	3	46	40	130

ACTIVITIES FOR THE YEAR

13 May 2016, Eastern Cape Groundwater Division Meeting and Talk (GWD EC KZN)

After an EC membership meeting an inspiring talk and presentation by Leslie van Zyl-Smit of REDE Engineering and Management Solutions around 'the good, the bad, the ugly' from his groundwater experience in the Eastern Cape followed.

21 June 2016 - GWD Regional Seminar (GWD WCAPE)

This event was hosted at the University of Stellenbosch.

July 2016 - Darcy Lecture Series

07 July 2016, UP, Gauteng

08 July 2016, UFS, Free State

12 July 2016, UWC, Cape Town

The 2016 Darcy Lecturer, Dr Ty Ferré presented on the theme: 'Seeing Things Differently: Rethinking the Relationship between Data, Models, and Decision-Making'

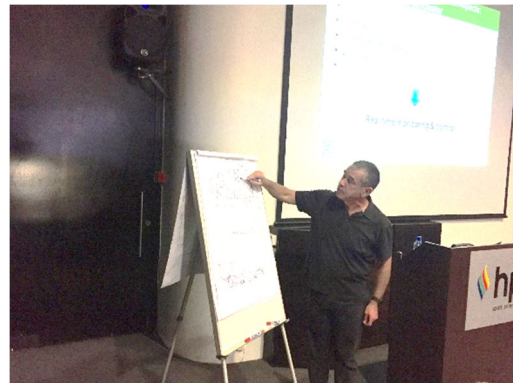
20 - 21 July 2016 - Groundwater in Action-Course (GWD Limpopo)



The Ground Water Division of the Geological Society of South Africa hosted this highly anticipated two day course for the first time in Limpopo. This event, with support and presentations not only by Dr Matthys Dippenaar (UP GWD Chair), Dr Roger Diamond (UP), Mr Fortress Netili (GWD Treasurer) and Mr Duncan Munyai (GWD Limpopo Chair) but also featured insightful presentations by strong regional role-players such as Mr Willem du Toit (DWS), Ismail Mahomed (SRK) and Mr Reinardt Weidemann from VSA Leboa Consulting whom also made available the field facilities. It was very well attended and the detailed attendee feedback received guided the Limpopo branch and the GWD in general on additional training requirements in the sector.

12 August 2016 – GWD Gauteng Talk:

Lecture and discussion on UCG and groundwater protection presented by Dr Michael S. Blinderman Ergo Exergy Technologies Inc., Canada, hosted at the HPC, Pretoria





5 November 2016 - Publication in Sunday Star Newspaper - GWD Opinion piece

STATEMENT BY THE GROUND WATER DIVISION: 1 NOVEMBER 2016 Water in South Africa – is groundwater an option?

Water scarcity, droughts and issues around potable water are frequent in the mass media. In the shadows of the concerns in the news, social media are abuzz with finger-pointing as to what the reasons are for water scarcity in South Africa.

In many instances, the issues can be solved by our water professionals, provided that we can get past the general misconception that South Africa has no water. Yes, South Africa is water scarce, and yes, water needs to be imported vast distances for supply, most notably to the urban areas. But in many areas of South Africa, groundwater is a vastly underrated source of water, which can possibly ameliorate many of the ever growing demands.

See the full article posted on the GWD website:
<http://www.gwd.org.za/sites/gwd.org.za/files/20161101%20STATEMENT%20BY%20THE%20GROUND%20WATER%20DIVISION%20version%202.pdf>

3 November 2016 – GWD Gauteng Talk

Profiling Long Screened Wells and Fractured Bedrock Boreholes - The Use of Downhole Miniaturized Tracer Technology under Steady State Dynamic Conditions
Presented by Noah Heller; BESST, Inc (San Rafael, CA)

10-12 May 2017, GWD Eastern Cape

This report was prepared by Mr Jan Myburgh. The course was supported by the following partners: AEON (Earth Stewardship Science Research Institute), VSA Leboa Consulting, AGES and SRK Consulting.

The Eastern Cape Branch of the GWD held a Geohydrological Short Course in collaboration with

AEON and the Nelson Mandela Metropolitan University in Port Elizabeth from 10 May to 12 May 2017. The theme was RESEARCH & APPLIED HYDROGEOLOGY IN THE EASTERN CAPE PROVINCE and it was attended by more than 40 people over the three days.



The course aimed at bringing Academics, Groundwater Professionals and Government together in looking at groundwater research and development in the province and beyond. It was therefore great to have had a more-or-less 1/3 attendance from each of these groups during the course.

We were privileged to have Dr. Ulrich Ofterdinger, a numerical modelling expert from Queens University, Belfast, Northern Ireland, available as part of his visit to SA in working with AEON on their Shale Gas research project. Dr Ofterdinger presented a half-day course on numerical groundwater modelling and discussed very interesting European case studies. The following topics were covered during the first two days, while the third day was dedicated to laboratory and site visits.

- *AEON baseline studies in the Karoo in anticipation of shale gas development (SGD)*
- *Towards Defining a Baseline Status of Scarce Groundwater Resources*
- *A Groundwater Investigation of the Eastern Karoo (Ciskei)*
- *Regional and Local Gas Leakage*
- *Stable Isotope and C14 signatures*
- *Diatoms as an Early Warning System of Pollution in Boreholes/Reservoirs*
- *Insects as an Early Warning System of Wetland Pollution*
- *Botanical Responses to Pollution*
- *AEON Applied Geophysics in the Karoo*
- *Deepwater Saline Reservoir Investigation through Magneto-Tellurics (MT)*
- *Low Altitude (Gyroscope/Drone) Airborne Surveying*
- *Passive Seismic Mapping in the Critical Zone*
- *Citizen science and Groundwater Monitoring*

- *Regulatory/Legislative Framework around SGD with a Focus on Groundwater*
- *Groundwater Exploration and Development in the Eastern Cape*
- *Regional Groundwater Monitoring at Municipal Level*
- *Groundwater Use Authorisation*
- *Groundwater-Community Compatibility Studies in the Eastern Cape*



We were further privileged to have Dr Ricky Murray in attendance to present approaches and outcomes of groundwater development work done associated on the Uitenhage Fault for Port Elizabeth municipal water supply as well as work done in the Matatiele area using aeromagnetic surveys. He further presented current work done in Namibia with diagonal deep-well drilling on faults as part of groundwater supply and artificial recharge projects for Windhoek.

The Friday's site visits were very informative and exciting and included a visit to the InnoVenton Laboratory where equipment such as their ICPMS (Inductively coupled plasma mass spectrometer), which is capable of detecting metals and several non-metals at concentrations as low as one part in 10¹⁵ (part per quadrillion, ppq) on non-interfered low-background isotopes, were visited.



The field visit outside Port Elizabeth firstly entailed a visit to a groundwater exploration drilling rig in action (compliments of Steyns Drilling). It turned out to be quite a stressful demonstration as the drilling site had to be identified based on geophysical work done by AGES, SRK and VSA groundwater consultants. There were many interesting debates around who will take responsibility if no water was found – and if so - all the scientific reasons why not. In the end, it was decided to drill halfway between the two sites voted for, so that no

consultancy can claim victory or be blamed for failure. Thirty minutes before course participants arrived at the rig, the borehole was still dry and as is the case with most groundwater exploration projects, we had to resort to the supernatural for help. Great was the relief when we arrived on site to see a blow yield of more than 25 000 l/hr after a major fracture was struck in the underlying quartzite, minutes before everybody's arrival.



Further demonstrations entailed Down-the Hole camera logging (AB Pumps), Isotopic methane and CO₂ measurements, Micro-Seismic Surveys, Citizen science app demonstration (AEON) as well as a Geophysical data dump app demonstration (AGES).



Everybody in attendance agreed that the course was very insightful and that this kind of collaboration between academics, groundwater professionals and government should be encouraged and continued in the province in future. The GWD wants to thank everyone that attended and especially Prof Maarten de Wit and the AEON team for facilitating the course and sharing their fascinating research work with the groundwater community.

SPONSORSHIPS AND ENDORSEMENTS

The GWD committed itself to sponsor a number of student delegates to attend its 15th Biennial Groundwater Conference to be hosted in the Western Cape in 2017.

PLANNED ACTIVITIES

7-9 June 2017 – GWD Field School, Gauteng HPC

The main objective of this 3-day short course is to teach participants the basic theory of groundwater in an easy and understandable way with emphasis on practical hands-on-experience.

LEVEL: Basic / Intermediate/ Advanced (for selected sessions)

Who should attend?

The Course is aimed at those involved or interested in groundwater (or geohydrology) who wish to broaden their understanding of the fundamentals in the application of geohydrological field work. We encourage all graduate trainees, field technicians, environmental assistants, technical assistants, water technicians; geohydrologists, assistant hydrogeologists; geo-technicians and consultants to attend.

COURSE CONTEXT:

- Linkage of the general geology of SA to groundwater occurrences (borehole yields, rainfall/recharge, aquifer parameters, fractures/faults, groundwater flow and other general characteristics)
- ABC of groundwater hydraulics including testing and interpreting testing results
- Practicals: Geophysics; slug test, pumping test and unsaturated testing
- Groundwater Supply (Urban, well-fields and remote water supplies, monitoring and management of water supply)
- Groundwater Data (QA/QC, Protocols and Reliability; Inferring change on the Groundwater model)
- Geochemistry (principles of, contaminant hydrology and transport)
- Miscible/ Immisible contaminants (sources & transport; mitigation and remediation)

14-18 October 2017, Groundwater Conference

The 15th Groundwater Division of the Geological Society of South Africa Conference will take place in Cape Town, South Africa, in October 2017.

Organisation of the conference is progressing well. We had almost 200 abstracts submitted, with only enough space for 10 plenary papers and 81 oral presentations. A strict selection process was followed and all authors have now been informed of the outcome. Three exciting midweek tours are on offer; and of course we remain excited about the participation of Prof. John Cherry and the three other international keynote speakers. To get the latest conference news please visit www.GWD2017.com.

7-10 November 2017 - Darcy Lecture Series

07 November 2017, UP, Gauteng

09 November 2017, UFS, Free State

10 Nov 2017, UWC, Cape Town



Kamini Singha, Ph.D., is the current Darcy Lecturer and a professor in the Department of Geology and Geological Engineering and the associate director of the Hydrologic Science and Engineering Program at the Colorado School of Mines. She worked at the U.S. Geological Survey

Branch of Geophysics from 1997 to 2000, and was a member of the faculty at The Pennsylvania State University from 2005 to 2012. She earned her B.S. in geophysics from the University of Connecticut in 1999 and her Ph.D. in hydrogeology from Stanford University in 2005.

Singha will offer a choice of two lectures at participating universities and professional associations:

“The Critical Role of Trees in Critical Zone Science: An Exploration of Water Fluxes in the Earth’s Permeable Skin” examines the geophysical tools used to study key processes that control water movement and availability in the subsurface where there is no easy access for observation.

“A Tale of Two Porosities: Exploring Why Contaminant Transport Doesn’t Always Behave the Way It Should” explores the long-term goals of work being conducted that aims to contribute toward improving the predictive capabilities of numerical models and enhancing the fidelity of long-term groundwater monitoring frameworks.

FINANCIAL SUMMARY

In 2014, the GWD centralised all its accounts into one National Account. This aid in the overall reporting function as well as ensure better application of available funds.

Current reported balances (01 May 2016)

NATIONAL **R 174,822.82 (Current)**
 R 888,111.93 (Invest)

Income and Expenditure for the year January - May 2016

	Expense Account	Income Account
<i>Operational expenses (Website/ Email/Secretariat/ EXCO Meetings)</i>	R 24,450.00	
<i>Vat, Refunds and Bank charges</i>	R 3,111.15	
<i>Events '17 Courses</i>	R 7,809.22	R 63,464.00
<i>For Conference 2017</i>	R 66,150.00	R 126,704.00
<i>Other expenses (sponsorships/ endorsements)</i>		
<i>Other income (profit sharing and interest)</i>		
<i>Transfer to/from branches</i>		
<i>Membership</i>		R 30,858.00
TOTAL	R 101,520.37	R 221,026.00

ARITIUS SYBRANDUS (SIEP) TALMA

(1944 –2016)



It was with great sadness that we learnt of the passing of Siep Talma on Friday, 11 November 2016.

Siep was a true gentleman and guided many of us in the use of isotopes in groundwater studies

Siep, a GWD Honorary Member and recipient of the Groundwater Lifetime Achievement Award in 2015, started his career at CSIR (1968 – 2005) with a background of physics and mathematics. He was instrumental in setting up an isotope lab old style where they had to design and make instruments locally. Later he became involved with many environmental applications of isotopes all over the country. He therefore became acquainted with the basics of different disciplines: palaeoclimatology, plant physiology, oceanography, air pollution, geochemistry, archaeology etc. The main practical application of isotopes remained in hydrology however. Since 2006, he was consulting and collaborating with different institutions dealing with hydrochemistry and isotope hydrology.