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BIENNIAL GROUND WATER CONFERENCE and exhibition

THEME :
GROUND WATER - STRETCHING OUR VISION

Organised by the

**GROUND WATER DIVISION (GWD) of the
GEOLOGICAL SOCIETY OF SOUTH AFRICA (GSSA)**

7th – 9th March 2005
CSIR International Convention Centre, Gauteng

***FINAL ANNOUNCEMENT,
PROGRAMME INFORMATION
and
REGISTRATION FORM***

THIS ANNOUNCEMENT HAS BEEN SPONSORED BY THE WATER RESEARCH COMMISSION

"EARLY BIRD" REGISTRATION BY 1ST FEBRUARY 2005

(note to printers – please put this crossways – across a corner on front cover)

CONTACT DETAILS

CORRESPONDENCE AND ENQUIRIES : RETURN OF REGISTRATION FORMS

CONFERENCE PLANNERS

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P O Box 82 (66 Queen Street)
IRENE
0062

Tel: +27 (0)12/667-3681
Fax: +27 (0)12/667-3680
E-mail: confplan@iafrica.com
Webpage: www.gwd.org.za

CONFERENCE CHAIRMAN

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Water Research Commission (WRC)
Private Bag X 03
0031 Gezina, Pretoria

Tel: +27 (0)12/330-9027
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GROUND WATER DIVISION of the GSSA

Ms Maureen Ruane (Secretariat)
P O Box 75728
0040 Lynnwood Ridge

Tel: +27 (0) 12/803-1545
Fax: same as above
E-mail: gwd@gwd.org.za

ACCOMMODATION – a courtesy bus will shuttle daily between the following hotels and the CSIR International Convention Centre

TOWN LODGE MENLO PARK

Cnr Atterbury/Klarinet Streets
P O Box 36866
0102 Menlo Park

Tel: +27 (0) 12/348-2711
Fax: +27 (0) 12/348-2820
E-mail: tmenlo.resv@citylodge.co.za
Webpage: www.citylodge.co.za

PARK GABLES GUEST HOUSE

784 Park Street P O Box 36815
Arcadia Menlo Park
0007 0102

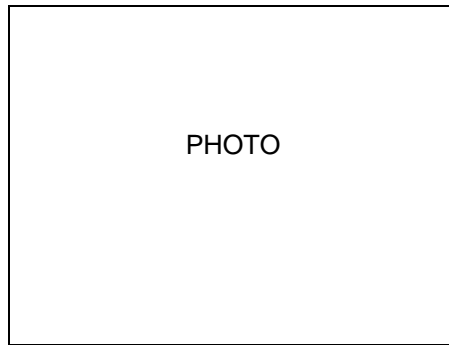
Tel: +27 (0) 12/344-0390
Fax: +27 (0) 12/344-0390
E-mail: reservations@parkgables.co.za
Webpage: www.parkgables.co.za

PROTEA MANOR HOTEL

Cnr Burnett/Festival Streets
P O Box 14334
Hatfield
0028

Tel: +27 (0) 12/362-7077
Fax: +27 (0) 12/362-5646
E-mail: mphotel@satis.co.za
Webpage: www.proteahotels.com

ADVERT : INTERNATIONAL ASSOCIATION OF HYDROGEOLOGISTS



Dr Kevin Pietersen

LETTER OF INVITATION

Dear colleague

I am delighted to announce a resumption of the Biennial Ground Water Conferences after a ten year gap. The conference is scheduled to take place in March 2005 at the CSIR International Convention Centre in Pretoria. It is a pleasure and a privilege for me to invite you to join members of the Ground Water Division of the GSSA at the conference.

In South Africa, ground water is a national strategic resource, which assists in poverty alleviation and economic development. Approximately two-thirds of the rural population depend on ground water for their domestic needs; and most of the livestock farms, which are crucial contributors to agricultural production at commercial and subsistence level, depend on ground water. The continued viable use of ground water resources, especially the content of the National Water Act of 1998, will require management systems that integrate ground water into the broader water resource management framework.

The challenges confronting hydrogeologists and ground water resource managers are manifold and diverse. Hydrogeologists are still struggling to apply the growing knowledge base effectively to the more efficient management of environmental resources and to improve public and political perceptions of ground water and we therefore need your help at the conference to assist in addressing the many remaining knowledge gaps regarding ground water.

The members of the Conference Organising Committee join me in inviting you to attend this conference – and we look forward to seeing you there.

Dr Kevin Pietersen
Chairman of the Ground Water Division of the GSSA
and Conference Chairman

THEME: GROUND WATER : STRETCHING OUR VISION

“We, as hydrogeologist’s, are at present in a unique position to both meet what will be the most urgent societal needs of the next century and to advance scientific understanding of the earth system, but we will only be able to accomplish this if we stretch our vision beyond the limits we ourselves have defined for our field”

Fred M Philips

DATE AND VENUE

The conference will be held from Monday 7th to Wednesday 9th March 2005 at the CSIR International Convention Centre in Pretoria, South Africa. The conference is a resumption of the 'Biennial Ground Water Conference' after a ten-year break.

WHO SHOULD ATTEND

- * All members of the Ground Water Division of the GSSA
- * Geohydrologists, earth and environmental scientists
- * Engineering and consulting geologists
- * Urban planners and developers
- * Civil engineers in the field of waste disposal
- * Water resource planners and managers
- * Waste managers
- * Mining engineers
- * Municipal and city engineers
- * Irrigation designers / farmers

OBJECTIVE

The conference aims to consolidate knowledge of ground water in view of the dynamic changes to water resources management the last five years. The time will be opportune, to look back, stretch out and then push forward in the field of ground water.

TOPICS

- * Methods to quantify ground water resources, with special emphasis on basin wide studies through the adoption of system analysis approaches.
- Techniques for improved evaluation and prediction of ground water interactions with the surface water environment (including the ecological role and function of ground water - aquatic and terrestrial)
- Provision of water services to communities from resources that are located in traditionally low yielding hydrogeological domains.
- Translation of the principles of sustainable development and integrated water resource management (IWRM) to reality in order to ensure sustainable ground water management.
- Development and application of ground water resource decision support systems and monitoring systems.
- Support of policy development (resource directed measures and source directed controls) and institutional arrangements (including stakeholder participation) for water resource management
- Improved characterisation of ground water recharge, flow and storage in relation to assessing the role of aquifers in conjunctive use or integrated management schemes and for drought preparedness
- Improved understanding of subsurface biochemical/biological processes determining the natural contaminant attenuation capacity of aquifers in the vadose and saturated zones
- Approaches to control subsurface contaminant loads from existing land-use practices (e.g. mining) and future land-use planning.

ANNUAL GENERAL MEETING

The AGM of the Ground Water Division of the GSSA will be held during the conference. All delegates are invited to attend.

EXHIBITION

An exhibition – a showcase for all related industries – will be held alongside the conference. An 'Exhibition Package' which includes 3m x 3m of floorspace, daily teas and lunches, attendance for one person at the cocktail

party and the conference dinner and all documentation is available on a first-come-first-served basis. A floorplan of the exhibition area is included on the inside back cover of this announcement. Organisations wishing to exhibit are requested to indicate their interest on the Conference Registration Form and further information will be supplied.

ACCOMMODATION AND SHUTTLE TRANSPORT

Contact details for two local hotels and a bed & breakfast are included on the inside front cover of this announcement. Delegates are requested to make their own bookings. Daily courtesy transport will be provided between these three establishments and the conference venue. The hotels will make arrangements to meet delegates at the airport on arrival, on request.

CONFERENCE ORGANISING COMMITTEE

Dr Kevin Pieterse (Chairperson)	Water Research Commission and Chairman of the GWD of the GSSA
Ms Christine Colvin	CSIR Environmentek
Julian Conrad	Geoss
Chris Moseki	Department of Water Affairs & Forestry
Ms Maureen Ruane	GWD of the GSSA
Gary Small	Groundwater Consulting Services
Leslie Strachan	Council for Geoscience
Ms Cilla Taylor	Conference Planners (Secretariat)
Dr Rian Titus	Council for Geoscience

PAPERS

Papers presented at the conference will be available on CD-ROM and handed out at registration on the first morning of the conference. Printed abstracts of papers will be included in the Programme Handbook. Delegates can order a full set of papers (over and above the set on CD-ROM) at an additional cost of R400,00 (see Conference Registration Form).

SOCIAL FUNCTIONS

Delegates are invited to enjoy the two conference social functions which are included in the registration fee:

- * Cocktail Party / Poster Session - to be held immediately after the technical sessions on the first afternoon of the conference, Monday, 7th March.
- * Conference Dinner/Zoo Tour – Tuesday, 8th March. The conference dinner will be held at the Pretoria Zoo and preceded by a guided (night) zoo tour. Courtesy transport will be arranged from the appointed hotels.

AWARDS

The following sponsored awards will be judged at the conference:

1. The Best Paper (written) – presented at the cocktail party.
2. The Best Paper by a Student (written) – presented at the cocktail party.
3. The Best Poster (visual/informative) – presented at the Closing Session.
4. The Best Presentation (verbal) – presented at the Closing Session.

REGISTRATION

Fees -

The following fees are inclusive of VAT

	“Early bird” fee	Late fee
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Delegates	(up to 1 st February 2005)	(after 1 st February 2005)
Members of the Ground Water Division <i>(names will be checked against a list of members)</i>	R2 500	R3 200
Non-members	R2 900	R3 200
Presenting authors <i>(one author per paper)</i>	R2 300	R3 200
Group rate – organizations sending 10 or more delegates <i>(per person)</i>	R2 000	R3 200
Bona fide fulltime students	Fee on request	
Bound volume of papers	R400	

How to register

- * Complete the accompanying Registration Form and post or fax it to the Secretariat at the address indicated - preferably together with a cheque for the registration fee.
- * Although this announcement and Registration Form appears on the conference website (www.gwd.org.za) . It is not possible to register online but you may print the Registration Form from the website and then post or fax it to the Secretariat.
- * Payment of the fee may only be made by cheque or direct deposit made payable to: '**GROUND WATER CONFERENCE 2005**'. Please ensure that the delegate's name and/or name of the company are included as a reference.
- * If your organization wishes to deposit the fee directly into the conference bank account please **contact the Secretariat for the bank account details (Tel: 012/667-3681). You will be required to give details of the delegates' names, organization, branch of deposit and the amount to be paid.** Details of the conference bank account will only be made known once this information has been forthcoming.
- * VAT is payable on the registration fees. An original VAT invoice will be posted once the money has been received.
- * *Registration by Government departments:*
 - i) you are kindly requested to fax your completed registration form to the Secretariat – before handing it to your respective Accounts Department for payment.
 - ii) if necessary an original VAT invoice can be issued in advance. Please contact the Secretariat with the relevant details mentioned above (to avoid "anonymous" depositing by Government Departments into the conference bank account).

Payment of the registration fee includes:

- * Attendance at the technical sessions and/or workshop(s) of your choice
- * Daily lunch, tea/coffee at the venue
- * A bag containing a Programme Handbook, a CD-ROM of papers, a notepad and pen
- * Full papers on CD-ROM (abstracts will be printed in the Conference Programme)
- * Attendance at the cocktail party / poster session
- * Attendance at the conference dinner at the Pretoria Zoo preceded by a guided (night) tour of the zoo.
- * Courtesy transport between the appointed hotels and the venue
- * Free entry to the exhibition

Cancellation

Should you be unable to attend the conference after paying your registration fee, a refund (less bank charges and an administration fee) will be returned to you prior to 1st February 2005. After that date no refund can be made – but substitutions can be made at any stage.

Membership of the Ground Water Division of the GSSA

Members of the Ground Water Division are entitled to a R400 discount on the registration fee. Names will be checked against a membership list. Non-members are urged to join the Ground Water Division (annual membership: R140,00 plus R19,60 VAT = **R159,60**) and will then qualify for the discount. Telephone the Secretary of the GWD, Ms Maureen Ruane, at 012/803 1545, e-mail: gwd@gwd.org.za to arrange membership.

There will be a membership table at the conference where non-members may register to join the GWD.

ADVERT : UMVOTO - consultants for water resource management and development

ADVERT : ENVIRONMENTAL DRILLING

TECHNICAL PROGRAMME

Papers (to be held in parallel) were submitted in response to the Call for Papers. Most of the plenary papers have been invited. A list of papers offered, within session, are included at the back of this announcement. Please indicate your session preferences on the registration form to assist with the designation of venues.

LIST OF PAPERS FOR ORAL PRESENTATION – Subject to change

KEYNOTE ADDRESS

Science as the basis for local and regional water policy – essential ground water education for decision-makers – **A STONE, American Ground Water Trust (USA)**

NATIONAL WATER RESOURCE STRATEGY

National Water Resource Strategy: implications for groundwater resource management – **W ROWLSTON, Dept of Water Affairs & Forestry**

Strategies to mainstream groundwater into the broader water resource management framework – **J VAN ROOYEN, Dept of Water Affairs & Forestry**

Groundwater use and availability in South Africa – **P ROSEWARNE, SRK**

ADVERT : WATER RESEARCH COMMISSION

QUANTIFICATION OF GROUND WATER RESOURCES

Is pump testing data alone sufficient for proper aquifer management – **P DZANGA, SA Nuclear Energy Corp**

Sustainable yield estimation in fractured rock aquifers: a case study from Hermanus – **K RIEMANN, Umvoto Africa (Pty) Ltd and C J H Hartnady**

Electro-seismic survey used for borehole siting - **R DENNIS, University of the Free State and M du Preez**

Analyses of hydrocensus and NGDB data in the TMG dominated area of the Olifants Doring River WMA – **L J GROENEWALD, Umvoto Africa (Pty) Ltd,**

A phased approach to the evaluation of the sustainable ground water resources of Zeerust Dolomite Compartment - **G L HUBERT, E Martinelli & Partners, H J van Rensburg, E van Wyk, J M Nel, F E Wiegmans and T C Partridge**

The development of methods for estimating ground water use in South Africa – **S HUGHES, CSIR Environmentek, W du Toit, Z Mahlambi and L Schonegevel**

A GIS-based approach to quantifying ground water – **F RUSINGA, Groundwater Africa, E C Murray, A Woodford and E van Wyk**

Evaluation of water supplies from the Table Mountain Group aquifer – **R NAKHWA, University of the Western Cape and Y Xu**

Groundwater storage and yield potentials in fractured aquifers in the Thabina Valley, Tzaneen – **J O ODIYO, University of Venda of S & T and F Ramusiya**

Calculating the ground water contribution to Zeekoevlei – **R PARSONS, Parsons & Associates and J Wentzel**

Utilising deep aquifers in the eastern limb of the BIC – **F S BOTHA, Dept of Water Affairs & Forestry, C Haupt and P Wilken**

National ground water resources assessment – Phase II – **J GIRMAN, Dept of Water Affairs & Forestry and P Rosewarne**

Aquifer development and geometry specific to basement aquifer systems in Namaqualand, South Africa – a review – **R A TITUS, Council for Geoscience, Y Xu, S Adams and H Beekman**

Ground water development and resource management in Lesotho – the challenge ahead – **K TROSKIE, Groundwater Consulting Services (Pty) Ltd and M Stewart**

Management of a Karoo fractured rock aquifer system – the Kalkveld Water User Association – **B H USHER, University of the Free State, J A Pretorius, G J van Tonder and J van der Merwe**

Analysis of long-term South African ground water level time series – **R MEYER, CSIR Environmentek**

The challenge of drilling deep and high yielding boreholes in quartzites of the Table Mountain Group – **J WEAVER, CSIR Environmentek, R Hay and P McCullough**

A new approach to determination of fracture anisotropies and hydraulic conductivities in the Table Mountain Group area – **L LIN, University of the Western Cape and Y Xu**

Ground water recharge determination using the standardized precipitation index and water level time series – **R MEYER, CSIR Environmentek**

Common errors hydrogeologists made when assessing ground water flow systems: examples over 30 years – **G J VAN TONDER, University of the Free State, D Vermeulen, I Dennis and B Usher**

ADVERT : GROUNDWATER CONSULTING SERVICES

Water, environmental and earth science consultants

SUSTAINABLE GROUND WATER MANAGEMENT AND MONITORING

Water husbandry – **E R Hay, Umvoto Africa (Pty) Ltd, A Mlisa and K Riemann**

Groundwater socio-ecology of Limpopo Province, South Africa – **D D TEWARI, University of KwaZulu-Natal**

Hydrogeological and isotopic research in the semi-arid area of northwestern Nigeria – **SEGUN ADELANA, University of the Western Cape, P I Olasehinde and P Vrbka**

Assessment of vulnerability of water resources to environmental change in southern Africa and the role of ground water – **H E BEEKMAN, Consultant, I Saayman and S Hughes**

Integrated Water Resource Management (IWRM) and disaster reduction – **C J H HARTNADY, Umvoto Africa (Pty) Ltd and E R Hay**

The application of geostatistics to analyse monitoring data and forecast future groundwater level responses as a tool to manage groundwater resources – **KATIA DEL ROSARIO, Hydraulic Resources National Institute (Cuba), W du Toit and H Verster**

Ground water monitoring – quality and quantity experiences with DIVER – **I JACKMAN, Barlofco cc**

The integration of remote and ground sensing studies towards the development of a typical ground water monitoring programme – **U E SIBILSKI, AngloGoldAshanti Ltd**

Ground water monitoring network design for Sandveld area using numerical models – **J ZHANG, CSIR Environmentek, J Weaver, J Conrad and E van Wyk**

Sustainable development and IWRM in the context of socio-cultural transformation – **K RIEMANN, Umvoto Africa (Pty) Ltd and E R Hay**

Risk assessment and remediation in support of Integrated Water Resource Management – **R GROBBELAAR, Jasper Muller Associates cc and J L Muller**

A new software assessment tool for auditing water schemes – **L K STRACHAN, Council for Geoscience and A F Smit**

Ground water dependence within the Southern African Development Community (SADC) – **N S ROBINS, British Geological Survey (UK), J L Farr and J Davies**

GROUND WATER POLICY AND MANAGEMENT

Ground water management in South Africa: the road ahead – **F S BOTHA, Dept of Water Affairs & Forestry and J van Rooyen**

Ground water management: the experiences of a geohydrologist – **E BERTRAM, Dept of Water Affairs & Forestry**

Resource directed measures – policies, implementation and lessons learnt from the Sandveld, Western Cape, South Africa – **J CONRAD, GEOSS, J Wentzel and H Pienaar**

Ground water resource assessment from the “resource directed measures” perspective – **A MAVURAYI, DWAF/Wolwega Consulting**

Ground water and resource directed measures: a perspective – **R PARSONS, Parsons & Associates and J Wentzel**

Water provision from ground water in the Northern Cape – balancing demand and supply – **G S duT VAN WYK, Dept of Water Affairs & Forestry and R Peters**

GROUND WATER RECHARGE

CFC as tracers of ground water flow in fractured rock – **A S TALMA, CSIR Environmentek and J M C Weaver**
Managed aquifer recharge – a viable solution for sustainable water supply (both in terms of quantity and quality) in arid rural areas – **C J HAUPT, WSM Leshika and P Mouton**

Ground water recharge assessment of the basement aquifers of Central Namaqualand – **S ADAMS, University of the Western Cape, Y Xu and R Titus**

Determining intrinsic hydraulic properties of consolidated hardrock with application of laboratory core analyses tools – **L FLANAGAN, Parsons & Associates**

Recharge estimation in TMG areas using the soil water balance method – **HAILI JIA, University of the Western Cape and Y Xu**

Near field and far field conceptual models for evaluation of contaminated fractured rock aquifers – **JOHANITA KOTZE, ERM Southern Africa and M N Sara**

Calibration of GIS based recharge estimations in the Olifants Doring WMA – **ANDISWA MLISA, Umvoto Africa (Pty) Ltd, E R Hay and K Riemann**

Water balance approach to recharge estimation of Table Mountain Group aquifer in the western Klein Karoo – Montagu area – **X SUN, Univ of Western Cape, Y Xu and Y Wu**

Preliminary study of snow impact on recharge of Table Mountain Group aquifer systems – **Y WU, Univ of Western Cape and Y Xu**

Determination of transport parameters in fractured aquifers with tracer methods – **K T WITTHUESER, University of Pretoria**

GROUND WATER CONTAMINATION

Nitrate removal from groundwater and soil – **SUMAYA ISRAEL, CSIR Environmentek and G Tredoux**

An examination into the iron biofouling of the atlantis aquifer and the factors influencing borehole clogging – **A G MAHERRY, CSIR Environmentek and G Tredoux**

Useful tools and processes in determining natural attenuation in the vadose and saturated zones – **R S McKEOWN, ERM Southern Africa**

Movement of chrome through both the saturated and unsaturated zones – a case study illustrating the natural attenuation capacity of the aquifer – **J SIBANYONI, Jasper Muller Associates cc, L K Both and R Grobbelaar**

Biobarrier formation to facilitate hydraulic control as part of ground water remediation strategies – **ADRIE VAN WYK, University of the Free State and B User**

The treatment of acid mine effluent by implementing Savmin process – **R E DAMONS, Mintek**

Managing groundwater contaminants in South Africa’s aquifers – **INGRID DENNIS, University of the Free State, B Usher, J A Pretorius, N Jovanovic, R Titus, S Clarke and L Cave**

Quantification of the impact of irrigation on the groundwater resource in the Vaalharts Irrigation Scheme – **R G ELLINGTON, Groundwater Consulting Services, B H Usher and G J van Tonder**

An Excel-based information system for ranking of priority contaminants in urban catchments – **N Z JOVANOVIĆ, University of the Western Cape, S Maharaj, Y Xu and H Jia**

Real-time monitoring of hydraulic groundwater-stream interaction in mining-affected streams – pitfalls from the Wismutregion (Germany) and the Witwatersrand (South Africa) – **F WINDE, Far West Rand Dolomitic Water Association (FWRDWA)**

Arsenic contamination in ground water drinking resources – suggestions for mitigation program – **M Y MEMON, SAFWCO (Pakistan), S Abro, M Mahesar, A Memon and T Ahmed**

The application of ‘anomalous’ nitrogen isotopic tracers in urban industrial ground water pollution situations – **A S TALMA, CSIR Environmentek and R Meyer**

Effects of wastewater irrigation on the groundwater quality of Aiselby Farm and its environs – a case study – **MS E MANGORE, National University of Science and Technology (Zimbabwe)**

Nitrate: a limiting factor for ground water development – **G TREDOUX, CSIR Environmentek, J F P Engelbrecht, A S Talma and J Myburgh**

Bacteria in ground water are not always a threat to human health – **J F P ENGELBRECHT, CSIR Environmentek, G Tredoux, S Israel and A S Talma**

Interactions between ground water and surface water in dolomitic areas affected by deep-level gold mining – examples from the Far West Rand Goldfield (South Africa) – **F WINDE, FWRDWA**

GROUNDWATER-SURFACE WATER INTERACTION

Selected techniques to determine ground water discharge to aquifer dependent ecosystems at study sites in South Africa – **CHRISTINE COLVIN, CSIR Environmentek**

Vegetation change vector analysis for evaluating the impact of ground water abstraction on terrestrial and riparian vegetation – **ANDISWA MLISA, Umvoto Africa (Pty) Ltd, E R Hay and C Tyson**

The influence of physical catchment characteristics on baseflow contributions to streams – a preliminary insight into the Table Mountain Group – **A W OOSTHUIZEN, University of the Western Cape, Y Xu and A C T Scheepers**

A proposed methodology to simulate surface-ground water interactions at a subcatchment scale – part of the Groundwater Resources Assessment Phase II project of DWAF – **K SAMI, W S M Leshika, D A Hughes, F W Fsehazion and E van Wyk**

The Lund imaging system as a tool to define vegetation controls next to Langebaan – **Ms L E SOLTAU, CSIR Environmentek**

Understanding the ecology of ground water dependent ecosystems (BDEs): preliminary study in Karsts at the Cradle of Humankind World Heritage Site – **MS S TSAKAI, Rand Afrikaans University**

The role of artificial recharge in future water supplies – **E C MURRAY, Groundwater Africa and G Tredoux**

GROUND WATER AND MINING

Ensuring sustainable development by including NAPLs in South African ground water management – **JENNIFER PRETORIUS, University of the Free State, T S Phophi, S Hohne and B H Usher**

Mine dewatering aspects at Lethhakane, central Botswana – **M C MURESAN, KLM Consulting Services**

Identification of the source and liability of nitrate contamination in ground water in a gold mine environment – an investigation towards mitigation/remediation – **SIMONE LABUSCHAGNE, AngloGoldAshanti Ltd**

Understanding site geohydrology, relevant to a typical gold mine environment, with the focus on closure and rehabilitation – **P F LABUSCHAGNE, AngloGoldAshanti Ltd**

Ground water supply and mine dewatering – can they co-exist? A case study from West Africa – **G MACLEAR, SRK Consulting**

The importance of specialist ground water investigations during mine design and development in the platinum industry to reduce ground water contamination during mining – **JOHANITA KOTZE, ERM Southern Africa (Pty) Ltd and P Cheshire**

Dewatering in the vicinity of Sishen Mine, Northern Cape – **J PRETORIUS, Golder Associates and G L Hubert**

The utilization of an ash wall for the treatment control of acid mine drainage – **KELLEY REYNOLDS, University of the Western Cape**

Recharge in South African underground collieries – **P D VERMEULEN, University of the Free State and F D I Hodgson**

GROUND WATER RESOURCE PROTECTION

Remediation of contaminated land and water resources: policy and strategy for South Africa – Author to be advised.

Mining and groundwater impacts – **A JOHNSTONE, Groundwater Consulting Services**

Agriculture and groundwater impacts – **M FEY, University of Stellenbosch**

GROUND WATER GENERAL

The recommended approach for municipal ground water management - **B ALEOBUA, Groundwater Africa, E C Murray and P Ravenscroft**

Multiple criteria decision analysis in ground water management – **K PIETERSEN, Water Research Commission**

Appropriate technology, an innovative solution for the provision of water supply and sanitation in South Africa – **TANIA SWANEPOEL, Letshabile Consultants (Pty) Ltd and G Small**

THE IMPACT OF GROUND WATER ON THE FUTURE

Basic human needs and the right to health: the contribution of groundwater – **K PIETERSEN, Water Research Commission**

Liquid assets: the cost of staying alive with limited water resources – **G SMALL, Groundwater Consulting Services**

Our future in the balance: can we protect environmental requirements? – **CHRISTINE COLVIN, CSIR Environmentek**

CLOSING ADDRESS

Good governance: the catalyst for sustainable groundwater management – **P ASHTON, CSIR Environmentek**

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POSTER PAPERS

Isotopes techniques as tools for sustainable groundwater development and management – **S M A ADELANA, Univ of Western Cape and P I OPlasehinde**

Groundwater management vs. applied geology in the mining industry: is groundwater considered a valuable nature resource or an afterthought? – **F S BOTHA, Dept Water Affairs & Forestry and C Haupt**

Vaalwater: the final frontier – **F S BOTHA, Dept Water Affairs & Forestry and R Weidemann**

Flow symptoms and application of the various analytical models for pumping test in fracture aquifer systems of the Table Mountain Group – **J R BULASIGOBO, Univ of Western Cape and Y Xu**

Remote sensing based botany and groundwater dependency study: northern Sandveld – **J CONRAD, GEOSS, Z Munch, B Low and J Wentzel**

South African License Application Decision Support System (SALADSS) – **J CONRAD, GEOSS, F C Basson, J Girman and J Wentzel**

Rural water supply and Record of Decision (RoD) – **L J GROENEWALD, Umvoto Africa (Pty) Ltd and E R Hay**

The importance of knowledgeable co-operative of exploiters in the qualitative preserving of the Karun and Dez Rivers in Khuzestan province, Iran – **Z N HOSSEINI, Water Resources Investigation Department (Iran) and N Saadati**

An overview of the assessment of the sustainable groundwater resources of the dolomite aquifer(s) of North West Province: a strategic water resources – **G L HUBERT, E Martinelli & Associates, E van Wyk and J Nel**

Source of groundwater contamination in the Nkonkobe district of the Eastern Cape Province of South Africa – **M N B MOMBA, Univ of Fort Hare, N Makala and G S R Koll**

Development of groundwater supplies for sedgefield, southern Cape – **R PARSONS, Parsons & Associates**

A comprehensive environmental monitoring program for IWRM – **K RIEMANN, Umvoto Africa (Pty) Ltd, E R Hay and C J H Hartnady**

The impact of El Nino on rainfall in southern Africa with a focus on South Africa – **M ROUAULT, Univ of Cape Town and Y Richard**

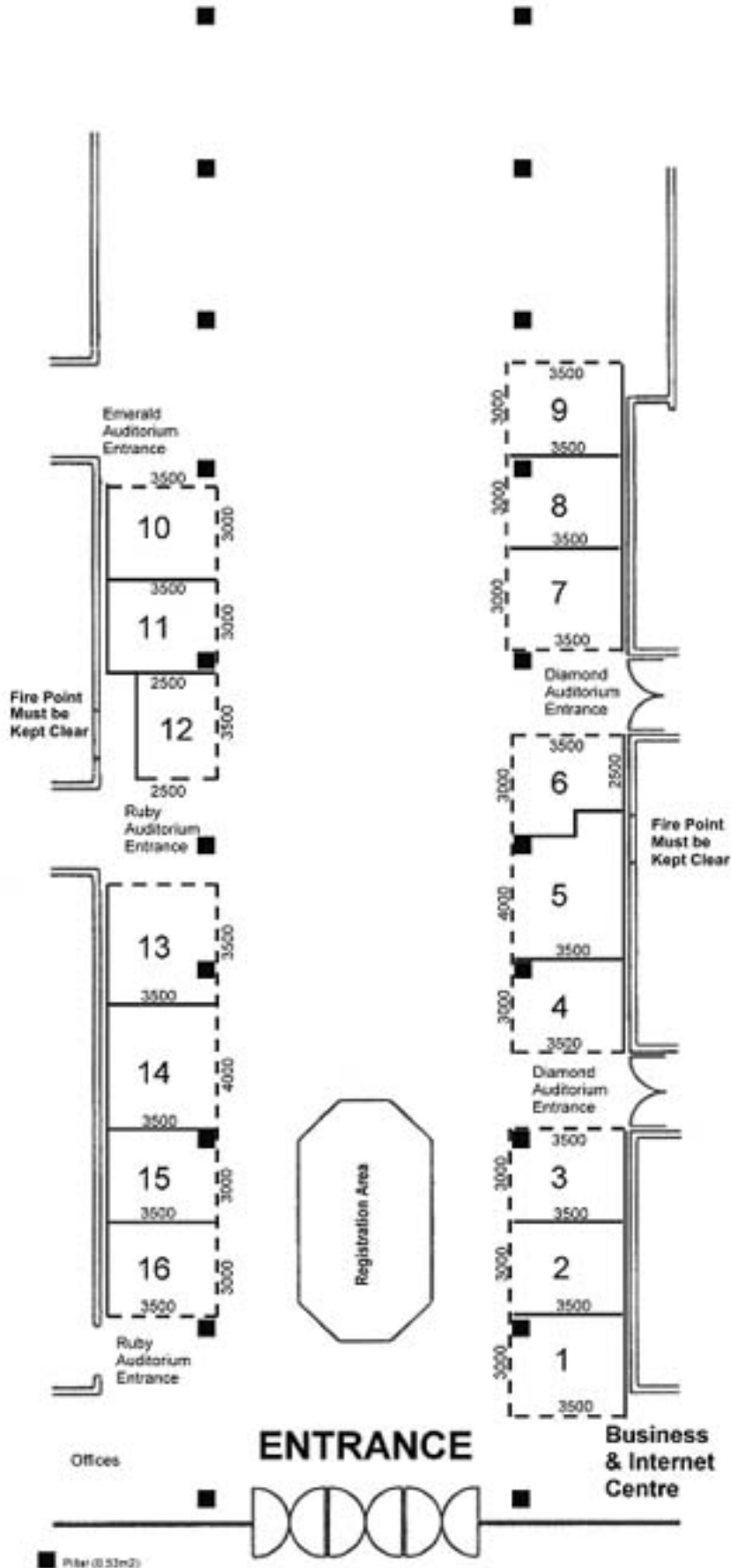
Modelling of rural water supply schemes in South Africa – a case study in predictive modeling to establish sustainability and best practices using the analytical hierarchy process and artificial neural network analysis – **L K C STRACHAN, Council for Geoscience and A F Smit**

Managing the impact of irrigation on the Tosca-Molopo groundwater resource, South Africa – **G S duT VAN DYK, Dept Water Affairs & Forestry and H du Toit**

Sustainable utilization of groundwater resources for irrigation purposes in the Koo Valley – a case study – **D VISSER, SRK Consulting**

EXHIBITION FLOORPLAN – on inside back cover

EXHIBITION
FLOORPLAN : CSIR
INTERNATIONAL
CONVENTION CENTRE



ACKNOWLEDGEMENTS

The Organising Committee gratefully acknowledges the following organizations for their financial support:

- * Council for Geoscience
- * Geohydrological and Spatial Solutions (GEOSS)
- * Groundwater Consulting Services (GCS)
- * International Association of Geohydrology (IAH)
- * Jasper Muller Associates cc
- * KLM Consulting Services
- * Parsons & Associates
- * Water Research Commission
- * UNESCO

ADVERT : EDRS
Environmental Drilling and Remediation Services

ADVERT : SRK CONSULTING