A photograph of a geological rock face with distinct horizontal layers. The top layer is light-colored and fractured. Below it is a darker, more textured layer. At the bottom is a dark grey, finely laminated layer. A geological hammer with a red handle and a metal head is placed vertically against the rock face, with its head resting on the bottom layer. The hammer has some markings on the handle and head.

2010

ANNUAL REPORT  
COUNCIL FOR GEOSCIENCE



Council for Geoscience









**Council for Geoscience**

# ANNUAL REPORT

period ended 31 MARCH 2010



# Contents

ANNUAL REPORT FOR THE PERIOD ENDED 31 MARCH 2010

page

4	Management Board
6	Review by the Chairperson of the Board and the Chief Executive Officer
9	Abridged Board Charter
10	Statement of Responsibility
12	Report of the Auditor-General
16	Executive Report
28	Performance Objectives
32	Report of the Audit and Risk Committee
34	Financial Statements
35	Statement of Financial Position
36	Statement of Financial Performance
37	Statement of Changes in Net Assets
38	Cash Flow Statement
39	Notes to the Financial Statements
39	1 Accounting policies
39	1.1 Basis of preparation
39	1.2 Revenue recognition
39	1.2.1 Recognition of income
39	1.2.2 Revenue from non-exchange transactions
40	1.2.3 Recognition of income from contracts
40	1.3 Interest received
40	1.4 Property and equipment
41	1.5 Intangible assets
41	1.6 Translation of foreign currencies
41	1.7 Research and development
42	1.8 Deferred income
42	1.9 Retirement benefit costs
42	1.10 Provisions and contingent liabilities
43	1.11 Financial instruments
44	1.12 Operating leases
44	1.13 Impairment
44	1.14 Critical accounting estimates and judgements
45	1.15 Sources of estimation uncertainty
45	2 Property and equipment
47	3 Intangible assets



47	4 Retirement benefit
47	4.1 Post-retirement medical-aid fund
48	4.2 Pension and Provident fund benefits
48	5 Trade and other receivables
49	6 Cash and cash equivalents
49	7 Revenue from non-exchange transactions
49	8 Trade and other payables
50	9 Deferred income
52	10 Accruals
52	11 Deficit/surplus from operations
55	12 Interest received
55	13 Finance cost
55	14 Reconciliation of net surplus for the period to cash generated from operations
56	15 Acquisition of:
56	15.1 Property and equipment
56	15.2 Intangible assets
56	16 Contingent liability
56	16.1 Bank guarantees
56	16.2 Retention on projects
57	16.3 Litigation
57	17 Taxation
57	18 Operating lease commitments
57	18.1 EVN Africa
57	18.2 Xerox/Bytes Technology
58	19 Financial instruments
58	19.1 Credit risk
58	19.2 Interest rate risk
58	19.3 Foreign currency risk
59	19.4 Airborne operations risk
59	20 Capital commitments
59	21 Foreign currency exposure
59	21.1 Trade receivables
59	21.2 Banks
60	22 Related-party transactions
60	23 Forensic investigation
61	24 Reconciliation between budget and statement of financial performance
61	25 Fruitless and wasteful expenditure
62	Value Added Statement
63	World Cup Expenditure
66	Highlights of Activities
83	Publications
90	Social Responsibility
93	Future Outlook
97	Sustainability Report
	Management



# Management Board

COUNCIL FOR GEOSCIENCE



**Prof P E Ngoepe**  
Chairperson of the Board



**Dr T Ramontja**  
Chief Executive Officer



**Ms K R Mthimunya**



**Ms L McCourt**



**Mr M P Nepfumbada**



**Dr D G Clarke**





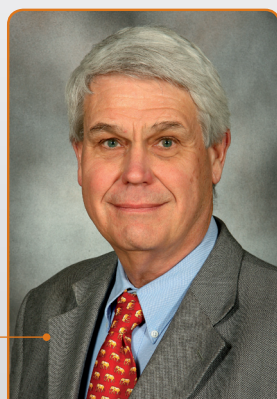
## Council for Geoscience



Mr K Hodges



Mr M Mabuza



Prof J M Barton Jr



Mr M Smith

### Alternate Members

**Mr W Kleynhans**

Alternate to Mr K Hodges

**Ms D Mochotlhi**

Alternate to Mr M P Nepfumbada

**Ms F N Nzimande**

Alternate to Mr M Mabuza

**Mr M Riba**

Alternate to Dr D G Clarke

**Dr C B Smith**

Alternate to Prof J M Barton Jr

# Review

CHAIRPERSON OF THE BOARD AND THE CHIEF EXECUTIVE OFFICER

It would not be inaccurate to conclude that the 2009/10 reporting year was one of the most difficult for the Council for Geoscience. In the previous reporting period, the effects of the global downturn were just beginning to be felt, owing largely to the sudden decrease in mineral prices and the consequent downscaling of exploration. For the Council for Geoscience, the 2009/10 reporting period has seen the full force of the drastic curtailment of mineral exploration, but, more pervasively, the reduction of activities across many sectors in the economy, such as energy, the environment and certain aspects of infrastructural build. For example, the sudden withdrawal of Eskom as a client, owing to economic considerations, was a big blow to the organisation. This, along with a strengthening of the Rand and the extremely slow repayment for geoservices from some of our international clients, aggravated the income and cash flow of the organisation.

However, towards the last quarter of the period under review the Council for Geoscience noticed a slight improvement in the geoscience-related spending being contemplated by the public and private sectors, both nationally and internationally. For example, significant negotiations were entered into with Eskom, and several large international tenders were submitted. It is hoped that this trend will pick up in pace in the forthcoming year.

One final comment on the effects of the economic downturn, both nationally and internationally, on the

Council for Geoscience has been the learning of several important lessons, including a crucial one, of the danger of relying too heavily on a single client, and secondly, the need to distribute risk through expanding the geoscience market we serve by widening the client base into a diverse and multi-sectoral one. The Board and Management are currently developing a comprehensive strategy that will address most of the challenges the organisation is facing.

The Board and Management are pleased to report, though, that despite the financial difficulties of the organisation, it reported a high level of completion of its statutory or public-good research, which testifies to the dedication of its staff and the sound management of the technical programme. The statutory or public-good programme of the Council for Geoscience forms a key component of the mandate of the organisation, providing the opportunity for young geoscientists to develop as researchers to MSc and PhD level, but also allowing the organisation to follow pre-competitive lines of investigation with potential innovative and commercial prospects.

A fundamental role of any national geoscience institution, such as the Council for Geoscience, is the acquisition of new geoscience data, be it in the form of geological mapping, geophysical surveys or national or regional geochemical sampling programmes. It is from this corpus of data that the country can adequately address geoscience concerns, be they mineral exploration, environmental, energy or water related.





Prof P E Ngoepe  
Chairperson of the Board



Dr T Ramontja  
Chief Executive Officer

Furthermore, the increasing interest in and concern with dynamic systems, such as the environment and geohazards, means that geoscience data gathering is no longer a 'once-off' process, but one that is carried out increasingly on a continual, monitoring and real-time basis. It is therefore of concern to the Board and Management that, owing to the financial constraints imposed on the organisation, it was forced to suspend a number of mandated data-gathering programmes, such as the airborne geophysical and geological mapping programmes.

South Africa is currently facing a serious challenge with regard to attracting exploration and mining investment. It will have to prepare itself to be competitive in this area through urgent interventions, which should include reinvesting in the geoscientific mapping of the country. In this regard urgent funding is required to address the matter.

Further cost-cutting measures were implemented, which included a 72 per cent cut in the budget of the geoscience library, the provision of only minimal core-viewing services at our national borehole core library and the curtailment of attendance of workshops and conferences by geoscientists. These measures were regrettable, but were deemed necessary to ensure the sustainability of the organisation.

The Council for Geoscience entered into high-level discussions with the Department of Science and Technology (DST), which culminated in the

submission of Research and Development projects, that were within the 'Grand Challenges' of the DST of energy security, space science and technology, global change, and human and social dynamics. The Department of Science and Technology has agreed to fund several of these projects, including a preliminary investigation of the geothermal potential of South Africa, a review of rare-earth element prospects in the country, and the development of a proposal or business plan for a systematic national geophysical sea-bed survey. Through this process, the Department of Science and Technology has also assisted the organisation in amending its research proposals such that they are more innovative (service driven) and embedded within the societal requirements and national imperatives of South Africa.

The Council for Geoscience made excellent progress and has almost completed the first CO<sub>2</sub> storage atlas of South Africa, which seeks to identify the most promising aquifers, both onshore and offshore, for the storage or sequestration of CO<sub>2</sub>, and which will assist South Africa's national and international commitment to reduce greenhouse gases. The discovery of suitable aquifers may have significant commercial advantages through the emerging carbon-credit exchange programme.

The Council for Geoscience progressed significantly in the development of integrating the seismic network, controlled by the mines, with the national seismic network for the country, controlled by the

organisation. This initiative is taking place at the request of the Mine Health and Safety Council and represents an exciting and innovative way to understand seismicity nationally and, in so doing, to reduce seismic-related fatalities.

Excellent progress was made with the proposed amendments to the Geoscience Act (Act No. 100 of 1993), which is now at the stage where public inputs are being reviewed. The Act and the proposed amendments represent a crucial stage in improving the mandate of the organisation in order that it can play an increasingly important role in the economic and environmental welfare of South Africa and its people.

The Council for Geoscience purchased a state-of-the-art drilling rig and associated supply rig. This equipment represents an important scientific and commercial platform, with its ability to do multi-drilling up to 400–500 m in depth. It is expected that the rig will be used for projects related to small-scale mining, as part of scientific research programmes, and in ongoing groundwater resource assessments. The purchase of the drilling rig gives the organisation independence and allows a rapid response time in respect of its drilling needs.

Income generated for the year amounted to R205,2 million, a decrease of 19% when compared with the previous financial year. The Council for Geoscience did not manage to attain the targeted commercial revenue of R85 million but, instead, generated commercial revenue to the amount of R62,6 million. This is the result of the termination of an Eskom contract to the amount of R32 million and the suspension of the small-scale mining programme from which

R10 million was expected. The economic recession made it impossible to turn around the situation.

In light of the above, several planned activities for the year were terminated in order to reduce costs. These include the suspension of costs related to the Annual Technical Programme other than direct labour and personnel costs, and included, amongst others, new recruitments, new bursaries, training, incentive bonuses, etc. Overhead costs, such as travel expenses, consulting fees, conference attendances, advertisement expenditure, etc. were also suspended. There were, however, costs that emanated from contracts that could not be suspended. These include costs pertaining to security services, cleaning services, maintenance services, etc. and had to be incurred in full.

The strengthening of the Rand had an adverse effect to the bottom line, resulting in a net foreign currency loss amounting to R10,4 million. The total deficit for the year amounted to R22,1 million.

The Board and Management of the Council for Geoscience are most appreciative of the dedication and loyalty shown by the staff in this difficult and unpredictable time for the organisation. We are certain that with this continued support the organisation will emerge from its financial difficulties stronger and reshaped for a future that looks bright for the geosciences.

The Board and Management of the Council for Geoscience would like to thank the Ministers and staff of the Departments of Mineral Resources and of Science and Technology for their valued support.



Prof P E Ngoepe  
Chairperson: Management Board of the  
Council for Geoscience



Dr T Ramontja  
Chief Executive Officer



# Abridged Board Charter

PER PFMA AND PROTOCOL ON CORPORATE GOVERNANCE

## Board Charter

A Board Charter, which sets out the responsibilities of the Board, was developed and established for the Management Board of the Council for Geoscience and includes the Code of Conduct of the Board. The Board is fully committed to maintaining the standards of integrity, accountability and openness required to achieve effective corporate governance.

The charter confirms the Board's

- accountability
- fiduciary duties and responsibilities
- appointment of committees
- governance and meeting procedures
- duty to declare conflict of interests
- responsibility for adoption of strategic plans
- monitoring of the operational performance and management
- determination of policy and processes to ensure the integrity of the Council for Geoscience's risk management and internal controls
- communications policy
- director selection, orientation and evaluation.

The Board Charter is reviewed when necessary to ensure that it remains relevant to the business objectives of the Council for Geoscience.

# Statement of Responsibility

COUNCIL FOR GEOSCIENCE

RESPONSIBILITY OF THE MANAGEMENT BOARD FOR THE ANNUAL FINANCIAL STATEMENTS

The Board Members are responsible for the monitoring, preparation and the integrity of the financial statements and related information included in this annual report.

For the Board to discharge its responsibilities, Management has developed and continues to maintain a system of internal controls. The Board has the ultimate responsibility for the system of internal controls and reviews its operation primarily through management structures.

The internal controls include a risk-based system of internal accounting and administrative controls designed to provide reasonable, but not absolute assurance that assets are safeguarded and that transactions are executed and recorded in accordance with generally accepted business practices, and the policies and procedures of the Council for Geoscience. These controls are implemented by skilled personnel, with an appropriate segregation of duties and are monitored by Management. It includes a comprehensive budgeting and reporting system, operating within strict deadlines and an appropriate control framework.

The Board is accountable for the process of risk management and the system of internal controls in the Council for Geoscience. This is regularly reviewed for effectiveness and for establishing appropriate risk and control policies, and communicating these throughout the organisation. There is an ongoing process for identifying, evaluating and managing the significant risks faced by the organisation. It has been in place for the year under review, up to the date of approval of the annual report and financial statements.

There is an adequate system of internal controls in place to mitigate any significant risk faced by the organisation to an acceptable level. This system is designed to manage, rather than eliminate, the risk of failure and to maximise the opportunities to achieve business objectives.

There is a documented and tested process in place that will allow the organisation to continue its critical business processes in the event of a disastrous incident impacting on its activities.

The external auditors are responsible for reporting on the financial statements. These financial statements are prepared in accordance with South African Statements of Generally Recognised Accounting Practices and incorporate disclosure in line with the accounting philosophy of the organisation. The financial statements are based on appropriate accounting policies, consistently applied and supported by reasonable and prudent judgements and estimates.

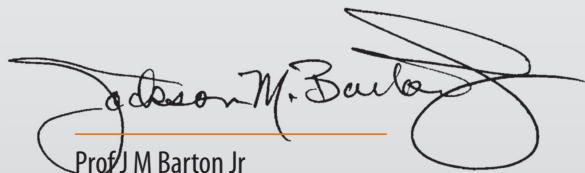
The Board Members believe that the organisation will be a going concern in the year ahead. For this reason, they continue to adopt the going-concern basis in preparing the financial statements of the Council for Geoscience.

The Board Members are not aware of any matter or circumstance arising since the end of the financial year, not otherwise dealt with in the annual financial statements of the Council for Geoscience that would affect the operations of the organisation or the results of its operations significantly.

The annual financial statements for the year 2009/10 were approved by the Accounting Authority in terms of section 51(1)(f) of the Public Finance Management Act on 30 July 2010 and are signed on its behalf by:



Prof P E Ngoepe  
Chairperson: Management Board of the  
Council for Geoscience



Prof J M Barton Jr  
Member: Management Board of the  
Council for Geoscience

30 July 2010  
Pretoria



# REPORT OF THE AUDITOR-GENERAL

## TO PARLIAMENT ON THE FINANCIAL STATEMENTS OF THE COUNCIL FOR GEOSCIENCE FOR THE YEAR ENDED 31 MARCH 2010

### REPORT ON THE FINANCIAL STATEMENTS

#### Introduction

I have audited the accompanying financial statements of the Council for Geoscience, which comprise the statement of financial position as at 31 March 2010, and the statement of financial performance, statement of changes in net assets and cash flow statement for the year then ended, and a summary of significant accounting policies and other explanatory information, as set out on pages 34 to 64.

#### Accounting authority's responsibility for the financial statements

The accounting authority is responsible for the preparation and fair presentation of these financial statements in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP), and in the manner required by the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999). This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

#### Auditor-General's responsibility

As required by section 188 of the Constitution of South Africa and section 4 of the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA), my responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with International Standards on Auditing and *General Notice 1570 of 2009* issued in *Government Gazette 32758 of 27 November 2009*. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation

and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

### **Opinion**

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Council for Geoscience as at 31 March 2010 and its financial performance, and its cash flows for the year then ended, in accordance with SA Standards of GRAP and in the manner required by the PFMA.

### **Emphasis of matter**

I draw attention to the matter below. My opinion is not modified in respect of this matter:

As disclosed in note 25 to the financial statements, fruitless and wasteful expenditure to the amount of R2 957 448 was incurred with regard to premiums on the group life policy that were paid on behalf of the employees. No employees' tax was deducted for the fringe benefit in terms of paragraph 2(h) of the Seventh Schedule to the Income Tax Act, 1962 (Act No. 58 of 1962).

Uncertainties relating to the future outcomes disclosed in note 16 amount to R5 717 000.

### **Additional matters**

I draw attention to the matter below. My opinion is not modified in respect of this matter:

The value added statement set out on page 62 does not form part of the financial statements and is presented as additional information. I have not audited this statement and accordingly I do not express an opinion thereon.

## REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

In terms of the PAA and *General Notice 1570 of 2009*, issued in *Government Gazette No. 32758 of 27 November 2009* I include below my findings on the report on predetermined objectives, compliance with the PFMA and financial management (internal control).

### Findings

#### Predetermined objectives

No matters to report.

#### Compliance with laws and regulations

No matters to report.

### INTERNAL CONTROL

I considered internal control relevant to my audit of the financial statements and the report on predetermined objectives and compliance with the PFMA but not for the purposes of expressing an opinion on the effectiveness of internal control. The matters reported are limited to the deficiencies identified during the audit.

No matters to report.

*Auditor-General*

Pretoria

31 July 2010



AUDITOR - GENERAL  
SOUTH AFRICA

*Auditing to build public confidence*





LEADING EARTH-SCIENCE SOLUTIONS



# Executive Report

## Mandate of the Council for Geoscience

The Council for Geoscience is mandated to gather, compile, interpret and disseminate geoscience knowledge for South Africa, as provided for by the Geoscience Act (Act No. 100 of 1993). This mandate includes the following:

- a) The systematic reconnaissance and documentation of the geology of the earth's surface and continental crust, including all offshore areas within the territorial boundaries of South Africa.
- b) The compilation of all geoscience data and information, particularly the geological, geophysical, geochemical and engineering-geological data in the form of maps and documents, which are placed in the public domain.
- c) Basic geoscience research into the nature and origin of rocks, ores, minerals, geological formations, the history and evolution of life and the formation of the earth with a view to understanding the geological processes of both the past and present and to compile and publish such research findings nationally and internationally to contribute to the understanding of the earth, its evolution and its resources.
- d) The collection and curation of all geoscience data and knowledge on South Africa in the National Geoscience Repository. This repository houses a large and growing collection of geoscience information on all the countries of the African continent. This information also includes data that were received from mining companies, universities and research institutions worldwide. Public access to all geoscience information is subject to existing legislation, arranged through the mandate of the Council for Geoscience.
- e) The rendering of geoscience knowledge services and advice to the State to enable informed and scientifically based decisions on the use of the earth's surface and the earth's resources, within the territory of South Africa.
- f) The management of a number of national geoscience facilities on behalf of the country. These include the National Seismograph Network, an Infrasound Observatory, the National Borehole Core Repository, the National Geoscience Museum, and the National Geoscience Library.
- g) As part of its seismological monitoring function, the Council for Geoscience contributes to the verification of global compliance to the ban on underground, underwater and upper atmospheric nuclear explosions in terms of the Comprehensive Nuclear Test Ban Treaty (CTBT), by making data available from stations located on South African territory.
- h) Provide geoscience data and products to external clients, both nationally and internationally. These services are to be rendered on a full cost-recovery basis.

## Legislative and Corporate Governance Requirements

The Council for Geoscience was established in terms of the Geoscience Act (Act No. 100 of 1993). This Act also established the mandate and national responsibilities of the organisation. The Council for Geoscience was listed as a schedule 3A Public Entity in terms of the Public Finance Management Act (Act No. 1 of 1999), as amended by Act No. 29 of 1999.

It should be noted that the process of amending the Geoscience Act is at an advanced stage. Cabinet has

approved the release of the Bill for public comments in March 2010. It is envisaged that the process will continue during the 2010/11 financial year.

## Overview of Business Operations

During the past year the Council for Geoscience has continued to execute both its statutory and commercial programmes. The management of the national geoscience facilities on behalf of the State is included in the statutory programme. However, the reliance of the organisation on commercially generated income to fund its Annual Technical Programme is proving to be a risky business model. The global economic downturn coincided with a period in the organisation that saw the completion of large projects funded by the European Union in Gabon and Ghana. The European Union and World Bank are not currently advertising projects at the scale of the Ghana or Gabon projects, and the organisation has had little success in winning some of the smaller projects that are being advertised. In some instances the Council for Geoscience has to compete with companies that can rely on financial support through other means, which allows them to provide services at very low, subsidised rates.

The strong South African Rand also impacted negatively on the income of the organisation during the year, as significant currency losses were experienced in the international projects mentioned above. It became evident that the organisation had to drastically reduce its direct expenditure and, in some instances, severe cost-cutting measures were introduced in order to curb the cost of the Annual Technical Programme.

The Council for Geoscience has reached a defining moment in its existence, which requires a strategic model that is firmly aimed, not only at securing commercial income, in particular large, integrated mapping projects, but also at establishing and strengthening partnerships with both private and public sector institutions in order to achieve its growing mandate within the context of the broader South African national and international priorities. The current dynamic context requires an honest evaluation of the key challenges facing the organisation to ensure that an appropriate set of strategies are designed and implemented. The more significant key challenges can be summarised as follows:

- Declining commercial revenue – the situation has reached a stage at which it is affecting the organisation's cash flow.
- Inadequate statutory funding – lack of funding has resulted in the curtailment of statutory programmes and investment into the human capital investment programme.
- Mid-career skills gap – there is an increasing shortage of mid-career scientists in the organisation.
- Ageing infrastructure – the organisation needs continued recapitalisation (equipment and buildings).
- Continuing with transformation – transformation processes of the Council for Geoscience have progressed well; however, more still needs to be done. Decreasing income revenues will pose a threat to the ongoing transformation agenda.
- Refocusing and aligning the organisation to address South Africa's developmental challenges – the organisation needs to ensure that its activities are aligned to the government developmental agenda.
- Amendments of the Geoscience Act – the new amendments will bring new challenges in terms of the additional resources required for the implementation of those changes.

Even though strict cost-cutting measures have been in place since September 2009, the Annual Technical Programme has made good progress in terms of achieving targets and improving performance. In this regard, the technical performance of the Council for Geoscience for the past year was 83,5 per cent. Some key highlights of the technical programme follow in the paragraphs below.

In strengthening the building of capacity in Africa, the Council for Geoscience is a key role-player in the Organisation of African Geological Surveys (OAGS), a NEPAD initiative. The mandate of this organisation is to foster and sustain government-supported geoscience endeavours and excellence on the African continent. The ultimate purpose of this endeavour is socio-economic development and poverty alleviation, with special reference to capacity building in the geosciences, mineral resources assessment, sustainable land use and development, hazard mitigation and environmental protection.

The Council for Geoscience is also part of a consortium of 23 African and European partners, known as the



African-European Georesources Observation System (AEGOS). This two-year long collaborative work programme is the preparatory phase required to design a Pan-African infrastructure for public, interoperable geology-related data and user-oriented services to foster and strengthen the sustainable use of georesources in Africa. AEGOS aims to safeguard, develop sharing and add value to the data archived in African and European geological surveys and to support further knowledge development on Africa's geology and georesources. This observation system will provide support to end-users, including policy-makers in all geographic regions, development agencies, the private sector, geoscience communities and civil society.

After 127 years of continuous coal mining in South Africa the remaining resources of the commodity are declining rapidly. The fact that no reliable coal resource figures are available for South Africa aggravates the situation. Therefore, as South Africa's coal resources are becoming more and more depleted, previously less attractive resources will have to be re-assessed and considered for exploitation. There is no doubt that the coal-mining industry still plays a vital role in the domestic economy and particularly for power generation, synthetic fuel and chemical production and in terms of foreign revenue generated from export contracts. Hence, there is an urgent need for an updated coal resources and reserves assessment. To this end the Council for Geoscience has undertaken pilot coal resource studies on some of the peripheral coalfields. This information is available, but there is a need to integrate the information with data from the mining companies that are active in the areas studied by the organisation.

In parallel, the Council for Geoscience undertook the assessment of the carbon-dioxide storage potential of South Africa in all onshore and offshore basins. The study is nearing completion and a report is expected to be released during 2010. The CO<sub>2</sub> storage report will be published in two forms, a glossy document intended for a broad public readership and a technical report for a scientific/technical readership. Knowledge of the geological storage capacity of CO<sub>2</sub> is of vital importance in formulating future energy policies, because with such capacity South Africa will be able to employ clean fossil fuel emission practices.

The Council for Geoscience was tasked by the Department of Mineral Resources (DMR) to identify all

known abandoned and unsafe mine openings occurring in the Gauteng, Limpopo and North West Provinces and to seal the most dangerous of these shafts. A total of 900 unsafe and abandoned mine-related openings have been located in the Gauteng, Limpopo and North West Provinces, of which 700 are located in Gauteng. A total of 108 extremely dangerous openings in and around Johannesburg were sealed.

The Council for Geoscience is involved in two projects which have allowed the installation of 12 seismograph stations within the Johannesburg area, under the DMR-sponsored Strategic Water Management Project, and the preparation for the installation of another 10 stations in the Carletonville area, in collaboration with the Japanese government. The aim is to monitor earthquakes within the gold-mining and abandoned mine areas, to assist in understanding, and thus mitigating the processes occurring in these areas.

Geophysical investigations have been carried out in parts of the country in order to assess the groundwater potential, using an integrated exploration approach that involves geophysical and hydrogeological studies. Airborne magnetic data, in conjunction with frequency and time-domain electromagnetic methods were used. Several potential groundwater targets were identified, based on interpretation of the integrated geophysical data sets.

The Council for Geoscience embarked on developing and implementing ISO 9001 in the organisation during 2008/09. Good progress was made and the implementation of ISO 17025 for the analytical laboratory commenced during 2009/10. It is felt that this accreditation will result in improved levels of professionalism, and the formal recognition of the quality of the services provided by the laboratory will be achieved.

## Strategic Objectives

The Council for Geoscience identified improved strategic outcomes and these are employed in the implementation of the organisation's strategy. The outcomes are grouped according to the four perspectives of the Corporate Balanced Scorecard.

### Market (Stakeholder/Customer) Perspective

- Increased customer/client/stakeholder satisfaction
- New products/services/technologies

## Highlights of Financial Results

	2010 R'000	2009 R'000
Government grant – core funding	132,677	122,672
Government grant recognised	2,666	3,336
Contracting revenue	62,595	110,602
Publication revenue	650	919
Other operating income	6,642	16,579
 Total revenue	 205,230	 254,108
Total expenses	227,343	252,541
Deficit/surplus for the year	(22,113)	1,567

#### Economic/Financial Growth Perspective

- Increased revenue
- Increased funding for statutory work
- Improved budget management

#### Effective Systems (Organisational) Perspective

- Improved planning and institutional reporting
- Improved business risk management and security
- Improved compliance and corporate governance
- Improved information and knowledge management
- Improved risk and security management
- Improved contract and project management
- Improved business processes efficiency

#### World Class People Perspective

- Increased access to critical/scarce skills (technical as well as managerial)
- Increased retention of critical/scarce skills
- A conducive work environment (positive culture, diversity, leadership)
- An improved employee performance culture
- A transformed Council for Geoscience.

The selection of the statutory programme is based on addressing the developmental needs of South Africa as captured in the government's Medium Term Strategic Framework for 2009 to 2014. For the purpose of the strategy, the developmental needs are grouped according to the following focus areas:

- Economic Growth
- Rural Development and Poverty Eradication
- Increasing Innovation
- Skills Development
- Expediting Transformation
- Development of Africa
- Addressing Stakeholder Needs and Regulatory Requirements.

The objectives of the Council for Geoscience are achieved by continuously improving and enhancing the quality of its geoscience research, products and services. The strategic research priorities of the organisation are based on the following seven scientific and business thrusts:

#### **Geoscience mapping:**

The systematic gathering and documenting of geoscience information. This represents the cornerstone of all the other business thrusts.

#### **Minerals development:**

To do research and systematically gather information on mineral occurrences in the country to stimulate investment in the mining sector.

#### **Environmental and chemical geohazards mapping:**

To systematically gather geoscience information and do research in order to advise on the identification, prevention and mitigation of the effects of geohazards on people and the environment.

#### **Engineering geoscience and physical geohazards mapping:**

To gather and analyse geoscience information to provide advice, in order to reduce the risk to lives and property from the effects of geohazards.

#### **Water-resource assessment and protection:**

To do research and render services for optimising the quality and quantity of groundwater resources to assist in the delivery of water to communities, industry and agriculture.

#### **Education and information:**

To facilitate the release of geoscience knowledge and information to the public.

#### **Energy:**

To contribute towards the energy security of South Africa.

The successful achievement of the above is highly dependent on critical success factors, which are essential for the organisation to achieve long-term sustainable success.

The critical success factors are:

- Adequate and competent scientists
- A happy workforce (high staff morale)
- The transfer of knowledge, skills and expertise to young scientists
- An integrated approach to service delivery
- The retention of experienced scientists
- Appropriate financial backing
- A workable balance between statutory and commercial work
- A structure that supports its strategy
- A strategic place/brand within the national priorities framework.



## Board of the Council for Geoscience

The Management Board of the Council for Geoscience approves the mission, strategies, goals, operating policies and priorities of the organisation and monitors compliance with the policies and achievements with respect to the scientific, administrative and financial objectives.

The Management Board is appointed by the Minister in accordance with the provisions of Section 4 of the Geoscience Act (Act No. 100 of 1993). Other than the CEO, all the Board Members are non-executive members. The Board Members are continuously and actively involved in, and bring independent counsel and judgement to bear on all Board discussions and decisions. Board Members are fully conversant with their fiduciary duties as are outlined in Section 50 of the PFMA, which, amongst others, requires them to declare their interests when a potential conflict of interest may arise. The Board meets on a quarterly basis, or as required during the course of a financial year.

The Board had the following active committees:

- Audit and Risk Committee
- Finance Committee
- Technical Committee
- Personnel, Remuneration and Transformation Committee.

The composition of the Board during the 2009/10 financial year is given below:

### **Prof P E Ngoepe**

Chairperson

*University of Limpopo*

Re-appointed on 1 October 2009

### **Dr T Ramontja**

Chief Executive Officer – *Ex Officio*

Re-appointed on 1 October 2009

### **Prof J M Barton Jr**

*Geological Society of South Africa*

Re-appointed on 1 October 2009

### **Dr D G Clarke**

*Department of Rural Development and Land Reform*

Re-appointed on 1 October 2009

### **Mr K Hodges**

*Industrial Development Corporation*

Re-appointed on 1 October 2009

### **Mr M Mabuzza**

*Department of Mineral Resources*

Re-appointed on 1 June 2009

### **Ms L McCourt**

*Department of Environmental Affairs*

Re-appointed on 1 October 2009

### **Ms K R Mthimunye**

*Bluewaves Consulting Services*

Appointed on 1 October 2009

### **Mr M P Nepfumbada**

*Department of Water Affairs*

Appointed on 1 October 2009

### **Mr M Smith**

*Chamber of Mines*

Re-appointed on 1 October 2009

## Alternate Members

### **Mr W Kleynhans**

*Industrial Development Corporation*

Alternate to Mr K Hodges

Appointed on 1 October 2009

### **Ms D Mochotlhi**

*Department of Water Affairs*

Alternate to Mr M P Nepfumbada

Appointed on 1 October 2009

### **Ms F N Nzimande**

*Department of Mineral Resources*

Alternate to Mr M Mabuzza

Appointed on 1 June 2009

### **Mr M Riba**

*Department of Rural Development and Land Reform*

Alternate to Dr D G Clarke

Re-appointed on 1 October 2009

### **Dr C B Smith**

*Geological Society of South Africa*

Alternate to Prof J M Barton Jr

Appointed on 1 October 2009

## Board Meetings 1 April 2009–30 September 2009

Members	2009			Meetings attended	Meetings not attended
	28 May	29 July	27 August		
Prof P E Ngoepe	Apology	Present	Present	2	1
Dr T Ramontja	Present	Present	Present	3	0
Prof J M Barton Jr	Present	Present	Present	3	0
Dr D G Clarke	Present	Present	Present	3	0
Mr R W Hieber	Present	Present	Present	3	0
Mr K Hodges	Present	Present	Present	3	0
Mr M Mabuza	Not a member	Apology	Apology	0	2
Ms T R Mbassa	Apology	Apology	Not a member	0	2
Ms L McCourt	Not a member	Not a member	Apology	0	1
Mr A P Nkuna	Present	Present	Apology	2	1
Ms T Xaso	Apology	Apology	Present	1	2
Ms N F Nzimande (Alternate to Mr Mabuza)	Not a member	Apology	Present	1	1
Mr T Riba (Alternate to Dr Clarke)	Main member present	Main member present	Main member present	0	0
Mr M Smith (Alternate to Mr Hieber)	Main member present	Main member present	Main member present	0	0

The new Board was appointed as effective from 1 October 2009 to 30 September 2012.

## Board Meetings 1 October 2009–31 March 2010

Members	2009	2010	Meetings attended	Meetings not attended
	19 November	3 March		
Prof P E Ngoepe	Present	Present	2	0
Dr T Ramontja	Present	Present	2	0
Prof J M Barton Jr	Present	Present	2	0
Dr D G Clarke	Apology	Apology	0	2
Mr K Hodges	Present	Apology	1	1
Mr M Mabuza	Apology	Apology	0	2
Ms L McCourt	Apology	Present	1	1
Ms K R Mthimunye	Present	Present	2	0
Mr M P Nepfumbada	Present	Present	2	0
Mr M Smith	Present	Apology	1	1
Mr W Kleynhans (Alternate to Mr Hodges)	Main member present	Present	1	0
Ms D Mochotlhi (Alternate to Mr Nepfumbada)	Main member present	Main member present	0	0
Ms N F Nzimande (Alternate to Mr Mabuza)	Present	Apology	1	1
Mr M Riba (Alternate to Dr Clarke)	Apology	Apology	0	2
Dr C B Smith (Alternate to Prof Barton)	Main member present	Main member present	0	0

## Audit and Risk Committee

The Audit and Risk Committee of the Council for Geoscience evaluates the annual internal and external audit plans, the internal and external audit reports and the financial statements. The Audit and Risk Committee also assesses the effectiveness of the internal audit function and the risk mitigation procedures, which are in place.

In addition, the Audit and Risk Committee, from time to time, assesses its mandate and charter in order to deal with emerging risks.

The composition of the Audit and Risk Committee as at 31 March 2010 was:

**Mr B M Hawksworth** Chairperson  
**Ms N G Jiyane**  
**Ms S J Mbongo**  
**Ms K R Mthimunya**  
**Mr M P Nepfumbada.**

### Audit and Risk Committee Meetings 1 April 2009–31 March 2010

Members	2009				2010	Meetings attended	Meetings not attended
	21 May	23 July	13 August	21 August	26 February		
Mr B M Hawksworth	Present	Present	Present	Present	Present	5	0
Mr R W Hieber	Present	Present	Present	Present	Not a member	4	0
Ms N G Jiyane	Present	Present	Apology	Present	Present	4	1
Ms S J Mbongo	Present	Present	Apology	Present	Apology	3	2
Ms K R Mthimunya (Joined 1/10/2009)	Not a member	Not a member	Not a member	Not a member	Present	1	0
Mr M P Nepfumbada (Joined 1/10/2009)	Not a member	Not a member	Not a member	Not a member	Present	1	0
Mr M Smith (Alternate to Mr Hieber)	Main member present	Main member present	Main member present	Main member present	Not a member	0	0

## Finance Committee

The Finance Committee of the Council for Geoscience deals with a range of corporate financial issues of the organisation, such as the recommendation for the approval of the Budget, the recommendation for major capital expenditure, the writing off of bad debts and assets and any other financial matters as are referred to it by the Board for recommendations.

The composition of the Finance Committee as at 31 March 2010 was:

**Ms K R Mthimunye** Chairperson  
from 1 October 2009

**Dr D G Clarke**

**Ms D Mochotlhi**

**Dr T Ramontja.**

### Finance Committee Meetings 1 April 2009–31 March 2010

Members	2009	2010	Meetings attended	Meetings not attended
	19 August	26 February		
Ms K R Mthimunye (Joined 1/10/2009)	Not a member	Present	1	0
Dr D G Clarke	Present	Present	2	0
Ms D Mochotlhi (Joined 1/10/2009)	Not a member	Present	1	0
Dr T Ramontja	Apology	Present	1	1
Mr M Smith	Present	Not a member	1	0
Mr M Riba (Alternate to Dr Clarke)	Main member present	Main member present	0	0



## Technical Committee

The Technical Committee of the Council for Geoscience deals with the annual scientific and technical programme of the organisation, evaluates the scientific and technical output, oversees the annual technical audit and recommends on such scientific and technical matters as are referred to it by the Board.

The composition of the Technical Committee as at 31 March 2010 was:

**Prof J M Barton Jr** Chairperson  
**Mr W Kleynhans**  
**Dr T Ramontja**  
**Mr M Smith.**

### Technical Committee Meetings 1 April 2009–31 March 2010

Members	2010	Meetings attended	Meetings not attended
	18 February		
Prof J M Barton Jr	Present	1	0
Mr W Kleynhans (Joined 1/10/2009)	Present	1	0
Dr T Ramontja	Present	1	0
Mr M Smith (Joined 1/10/2009)	Present	1	0

## Personnel, Remuneration and Transformation Committee

The Personnel, Remuneration and Transformation Committee determines the human resources strategies and policies of the Council for Geoscience. The Committee approves the remuneration structure and salary changes in the organisation and evaluates and makes recommendations on the payment of production bonuses. The Committee also decides upon the remuneration of the Executive Management.

The composition of the Personnel, Remuneration and Transformation Committee as at 31 March 2010 was:

**Ms L McCourt** Chairperson  
from 1 October 2009

**Prof J M Barton Jr**

**Mr M P Nepfumbada.**

### Personnel, Remuneration and Transformation Committee Meetings 1 April 2009–31 March 2010

Members	2009		2010	Meetings attended	Meetings not attended
	21 May	13 August	24 February		
Ms L McCourt (Joined 1/08/2009)	Not a member	Present	Present	2	0
Prof J M Barton Jr	Present	Present	Present	3	0
Mr L L Makibinyane	Present	Present	Not a member	2	0
Mr M P Nepfumbada (Joined 1/10/2009)	Not a member	Not a member	Present	1	0
Mr A P Nkuna	Present	Present	Not a member	2	0

## Financial and Operational Factors

### Post-balance-sheet events

No material facts or circumstances have arisen, between the date of the balance sheet and the production of this report, which will affect the financial position of the Council for Geoscience as is reflected in the financial statements.

### Major changes in respect of fixed assets

An amount of R19,8m was invested in the extension of the Bellville office building. Scientific equipment was acquired to the amount of R6,5m and vehicles for the drill rig were acquired at a cost of R2,9m.

## Losses Incurred or Recovered

### Material losses incurred

The Management Board of the Council for Geoscience has developed a Materiality and Significance Framework for the organisation. The Board has approved that any expenditure in excess of approximately 1 per cent of the annual operating expenditure budget, which is an amount of R1,000,000 for 2009/10, and/or the writing off and disposal of any asset in excess of approximately 2 per cent of the value of total assets as indicated in the annual financial statements of the year 2007/08, which is an amount of R8,600,000 individually or in aggregate, would be deemed material and significant. The Council for Geoscience has thus accepted the above-mentioned threshold figures of materiality for its financial framework.

# Performance Objectives

## Performance Management Criteria and Performance Targets

The Council for Geoscience has developed a number of measures that are used to evaluate the performance of the organisation against a set of predetermined targets. These measures were designed as a means to evaluate the performance of the organisation with respect to three levels of accountability. These include the measurement of:

- Collective scientific and technical output during a specific financial year
- The performance of the different business units
- Corporate performance.

The overall evaluation of corporate performance is based on aspects such as business growth, investment into organisational excellence, customer and client relationships, operational best practices, investing into people and stakeholder interaction. The above performance targets are set annually by the Council for Geoscience and are, at the end of the financial year, audited by a team of external auditors.

In accord with the new strategy developed by Management, the organisation has adopted a Balanced Scorecard (BSC) approach to its performance measurement. The corporate balanced scorecard, which measures the performance of the organisation at corporate, business unit and individual level was approved and accepted by the Management Board of the Council for Geoscience. The balanced scorecard incorporates the current performance measures into the following evaluation perspectives:

- Stakeholder and customer satisfaction
- Economic growth
- Organisational systems
- Scientific excellence and human capital development.

## Corporate Performance Targets

In order to evaluate the corporate performance of the Council for Geoscience, the organisation has developed a range of performance indicators, which cover the entire spectrum of activities within the organisation. The range of performance indicators, together with the performance targets for the period 2009/10 are summarised in the following table.



## Corporate Scorecard for 2009/10

Market (Stakeholder/Customer) Perspective		To drive stakeholder and customer satisfaction by the development of world-class products and services	
Objectives	Measures	Target 2009/10	Performance 2009/10
To serve our Stakeholders and Customers	- Annual Technical Programme Performance Index	85%	83,5%
	- Percentage Satisfied Customers	80%	90,1%
	- Number of Maps and Publications published	38	48
	- Number of Small-Scale Mining Investigations completed <sup>1</sup>	35	Not applicable
	- Number of Rural Development Projects <sup>2</sup>	22	33
	- Number of Regional and African Development Projects <sup>3</sup>	18	31

Economic/Financial Growth		To achieve sustainable revenue and profit growth	
Objectives	Measures	Target 2009/10	Performance 2009/10
Generate Revenue	- Total Revenue (Rands)	R244,3m	R205,2m
	- Government Grant	R127,8m	R132,7m
	- Contract Revenue (Rands)	R110m	R63,2m
	- Sundry Income	R6,5m	R9,3m
	- Commercial Surplus	R18,3m	-R22,1m
	- Ratio of Contract Revenue to Total Revenue	45%	30,8%
	- Ratio of External Revenue to Total Revenue	48%	35,4%
Overhead Efficiency	- Ratio of Overheads to Total Cost	52%	57,6%
	- Ratio of Personnel Cost to Total Cost	53,2%	57,6%

Effective Systems (Organisational)		To develop and maintain effective and streamlined processes, using appropriate tools and methodologies	
Objectives	Measures	Target 2009/10	Performance 2009/10
To Develop and Implement Effective Policies and Procedures	- Percentage ISO Implementation in accordance with Reference Report	50%	45%
To Drive Preferential Procurement	- Preferential Procurement as a percentage of Total Procurement	37%	44,3%
To Implement Corporate Planning and Reporting	- Number of Audit Qualifications	0	0

World Class People Perspective		To develop a world class geoscience organisation where our people can grow and perform	
Objectives	Measures	Target 2009/10	Performance 2009/10
To Attract and Retain a Skilled Workforce	- Nett Staff Turnover	-7%	-9,5%
	- Number of Staff and Students enrolled for MSc and PhD degrees <sup>4</sup>	24	38
	- Number of Papers and Articles published <sup>5</sup>	60	92
	- Proportion of Researchers to Total Staff	44%	40,8%
	- Percentage Scientific Staff with PhD and MSc Degrees	50%	55%
	- Number of Projects with External Collaborators <sup>6</sup>	50	61
	- Percentage Satisfied Protégées	50%	53,2%
	- Number of Strategic Science Partnerships <sup>7</sup>	10	21
To Build a Positive Organisational Culture	- Percentage Satisfied Staff Members	60%	66%
To Reflect and Embrace RSA Diversity	- Percentage Overall Employment Equity Targets in the Organisation (White-Black)	45:55	40:60
	- Percentage Overall Employment Equity Targets in the Organisation (Male-Female)	56:44	61:39

## Notes to the Corporate Scorecard

The following notes clarify instances where the variance between the expected target and observed performance, pertaining to operational measures, exceed 10 per cent:

### 1. Number of small-scale mining investigations completed

The small-scale mining investigations in their current format were discontinued by the Department of Mineral Resources and will restart again at a later stage.

### 2. Number of rural development projects

The higher number of rural development projects is directly linked to the strategy of the Council for Geoscience to focus more on rural development and poverty eradication. A larger number of projects regarding rural development were included in the Annual Technical Programme in the past year. These projects comprised geological mapping, mineral-occurrence investigations, groundwater studies and structure plans for municipal areas.

### 3. Number of regional and African development projects

The Council for Geoscience has continued to experience a remarkable success rate on projects in Africa. Many projects in countries such as Algeria, Ghana, Gabon, Madagascar, Mauritania and Mozambique continued in 2009/10 and some of them were also extended in scope. The success of the Council for Geoscience in regional and African development projects is ascribed to the increasing role the organisation is playing regionally and on the continent.

### 4. Number of staff and students enrolled for MSc and PhD degrees

The Council for Geoscience has continued to focus on skills development and attaining higher qualifications for its staff in 2009/10. Initial targets were set from a lower baseline, hence the performance under this measure has outstripped the expectation. Further studies are increasingly being promoted and are linked directly, in many instances, to either statutory or commercial projects. The role of the Young Science Forum by way of encouraging the young geoscientists in the organisation to gain further qualifications is also a contributing factor in the increased number of staff enrolling for MSc and PhD degrees.

### 5. Number of papers and articles published

The higher number of papers is ascribed to the large number of oral presentations made, which form part of conference proceedings. Another contributing factor is the policy of the Council for Geoscience to reward staff members who published during the year. The reward takes the form of making funding available to individuals to, for instance, purchase software, hardware or attend scientific conferences.

### 6. Number of projects with external collaborators

The sharp increase in the number of projects with external collaborators can be linked to the increase in local and international commercial projects, as well as a renewed focus on joint research and skills development. A direct spin-off is the large number of papers and articles published with outside collaborators.

### 7. Number of strategic science partnerships

This is a new measure that is focused at strengthening geoscience research in the organisation by engaging in joint research with universities and other research organisations. Establishing partnerships with these organisations was easier than expected.

# Report of the Audit and Risk Committee

## Responsibilities

The Management Board of the Council for Geoscience has the overall responsibility to ensure that the organisation has and maintains effective, efficient and transparent systems of risk management and internal controls. The responsibility to ensure the adequacy and effectiveness of these systems is delegated to the Audit and Risk Committee. The Audit and Risk Committee is an advisory committee of the Board, operating as overseer with an independent and objective stance.

The Audit and Risk Committee has adopted formal terms of reference, which have been confirmed by the Board, as its charter, and is satisfied that it has discharged its duties and responsibilities as set out in the Charter. In performing its responsibilities the Audit and Risk Committee has reviewed the following:

- The functioning of the internal control systems
- The functioning of the internal audit programme
- The risk areas of the entity's operations to be covered in the scope of the internal and external audits
- The reliability and accuracy of the financial information provided to Management and other users
- The accounting or auditing concerns identified as a result of the internal or external audits
- The entity's compliance with legal and regulatory provisions.

## Governance

The Board appointed the following members of the Audit and Risk Committee:

Mr B M Hawksworth (Chairperson)  
Ms N G Jiyane  
Ms S J Mbongo  
Ms K R Mthimunye  
Mr M P Nepfumbada.

The Audit and Risk Committee met five times during the period under review.

## Internal Control Systems

The members of the Audit and Risk Committee believe that the system of internal controls is adequately designed to cover organisational risks, financial risks and operational risks. The control system provides reasonable, but not absolute, assurance that the organisation's assets are safeguarded, transactions are authorised and recorded properly, and that material errors and irregularities are either prevented or detected timeously.



These controls are monitored throughout the organisation by Management and employees with the necessary segregation of authority and duties.

The Operational Risk Management Committee, which reports to the Audit and Risk Committee on a quarterly basis, continuously evaluates and monitors the effectiveness of all internal control systems in respect of all areas of risk that have been identified.

Having reviewed the effectiveness of the organisation's system of internal controls, and based on detailed reports provided by the Internal Auditors, the members of the Audit and Risk Committee are not aware of any significant weakness or deficiency in the organisation's system of internal controls.

### Internal Auditing

Internal auditing was outsourced during the year under review and provides a supportive role to Management and the Audit and Risk Committee to achieve their objectives by identifying and evaluating significant exposures to risk and contributing to the empowerment of risk management and control systems.

The internal audit function is responsible for independently and objectively evaluating the organisation's system of internal controls at a detailed level and to bring any significant business risks and exposures to the attention of Management and the Audit and Risk Committee through the provision of comprehensive internal audit reports.

### Financial Statements

The Audit and Risk Committee has reviewed and discussed the financial statements of the Council for Geoscience for the year ended 31 March 2010 with the Auditor-General and the Accounting Officer. The Audit and Risk Committee also reviewed the management letter of the Auditor-General and the responses of Management thereto. The members of the Audit and Risk Committee believe that the financial statements comply, in all material respects, to the requirements of the Public Finance Management Act (Act No. 1 of 1999, as amended) and Generally Recognised Accounting Practices (GRAP). The Audit and Risk Committee agrees that the adoption of the going-concern premise is appropriate in preparing the annual financial statements.

The Audit and Risk Committee, at its meeting held on 22 July 2010, recommended the adoption of the annual financial statements by the Management Board of the Council for Geoscience.

Approved



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Ms N G Jiyane  
Chairperson: Audit and Risk Committee

30 July 2010  
Pretoria

# Financial Statements

OF THE COUNCIL FOR GEOSCIENCE FOR THE PERIOD ENDED 31 MARCH 2010

page

35	Statement of Financial Position
36	Statement of Financial Performance
37	Statement of Changes in Net Assets
38	Cash Flow Statement
39	Notes to the Financial Statements
39	1 Accounting policies
45	2 Property and equipment
47	3 Intangible assets
47	4 Retirement benefit
48	5 Trade and other receivables
49	6 Cash and cash equivalents
49	7 Revenue from non-exchange transactions
49	8 Trade and other payables
50	9 Deferred income
52	10 Accruals
52	11 Deficit/surplus from operations
55	12 Interest received
55	13 Finance cost
55	14 Reconciliation of net surplus for the period to cash generated from operations
56	15 Acquisitions
56	16 Contingent liability
57	17 Taxation
57	18 Operating lease commitments
58	19 Financial instruments
59	20 Capital commitments
59	21 Foreign currency exposure
60	22 Related-party transactions
60	23 Forensic investigation
61	24 Reconciliation between budget and statement of financial performance
61	25 Fruitless and wasteful expenditure
62	Value Added Statement
63	World Cup Expenditure

Council for Geoscience

## Statement of Financial Position as at 31 March 2010

	Notes	2010 R'000	2009 R'000
<b>Assets</b>			
<b>Non-current assets</b>			
Property and equipment	2	205,012	187,383
Intangible assets	3	7,179	8,089
<b>Current assets</b>		149,062	193,142
Trade and other receivables	5	56,052	79,644
Cash and cash equivalents	6	93,010	113,498
<b>Total assets</b>		<b>361,253</b>	<b>388,614</b>
<b>Net assets and liabilities</b>			
<b>Net assets</b>			
Accumulated surplus		185,924	208,037
<b>Non-current liabilities</b>			
Post-employment benefit liabilities	4	19,949	18,838
Government grant	7	88,340	91,006
<b>Current liabilities</b>		67,040	70,733
Trade and other payables	8	15,551	15,722
Deferred income	9	45,161	48,235
Accruals	10	6,328	6,776
<b>Total net assets and liabilities</b>		<b>361,253</b>	<b>388,614</b>

Council for Geoscience

## Statement of Financial Performance for the period ended 31 March 2010

	Notes	2010 R'000	2009 R'000
<b>Revenue</b>	11	198,588	237,529
<b>Cost of contracts</b>	11	(46,585)	(55,988)
<b>Gross surplus</b>		152,003	181,541
Other operating income	11	4,432	9,994
Administrative expenses		(168,246)	(183,319)
Other operating expenses	11	(12,504)	(13,269)
Interest received	12	2,210	6,585
<b>(Deficit)/surplus from operations</b>		(22,105)	1,532
Finance cost	13	(8)	(15)
<b>Net (deficit)/surplus for the year</b>		(22,113)	1,517



Council for Geoscience

## Statement of Changes in Net Assets for the period ended 31 March 2010

	Notes	Accumulated surplus R'000	Total R'000
<b>Balance at 31 March 2008</b>		206,520	206,520
Net surplus for the year		1,517	1,517
<b>Balance at 31 March 2009</b>		208,037	208,037
Net deficit for the year		(22,113)	(22,113)
<b>Balance at 31 March 2010</b>		185,924	185,924

Council for Geoscience

## Cash Flow Statement for the period ended 31 March 2010

	Notes	2010 R'000	2009 R'000
<b>Cash inflow/(outflow) from operating activities</b>		10,822	(28,052)
Cash receipts from customers		219,514	232,688
Cash paid to suppliers and employees		(210,894)	(267,310)
Cash generated from operations	14	8,620	(34,622)
Interest received	12	2,210	6,585
Finance cost	13	(8)	(15)
<b>Cash outflow from investing activities</b>		(31,310)	(29,709)
Acquisition of:			
Property and equipment	15.1	(30,687)	(23,712)
Intangible assets	15.2	(635)	(6,500)
Proceeds on disposal of property and equipment		12	503
<b>Net decrease in cash and cash equivalents</b>		(20,488)	(57,761)
<b>Cash and cash equivalents at beginning of period</b>	6	113,498	171,259
<b>Cash and cash equivalents at end of period</b>	6	93,010	113,498

## 1 Accounting policies

### 1.1 Basis of preparation

#### Statement of compliance

1. The financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practices (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.  
The financial statements have been prepared on a historic cost basis and accounting policies are consistent with prior years.
2. The cash flow statement can only be prepared in accordance with the direct method.
3. Specific information has been presented separately on the statement of financial position such as:
  - (a) receivables from non-exchange transactions, including taxes and transfers;
  - (b) taxes and transfers payable;
  - (c) trade and other payables from non-exchange transactions.
4. The amount and nature of any restrictions on cash balances are required to be disclosed.

Paragraphs 11–15 of GRAP 1 have not been implemented due to the fact that the budget reporting standard has not been developed by the local standard setters and the international standard is not effective for the current financial year. Although the inclusion of budget information would enhance the usefulness of the financial statements, non-disclosure will not affect the objective of the financial statements.

### 1.2 Revenue recognition

Revenue comprises the annual government grant recognised as income in the current year, contract income and sales of publications.

#### 1.2.1 Recognition of income

The Council for Geoscience measures revenue at the fair value of the consideration received or receivable. Revenue is recognised only when it is probable that the economic benefits associated with a transaction will flow to the Council for Geoscience, and the amount of revenue and associated costs incurred or to be incurred, can be measured reliably.

#### 1.2.2 Revenue from non-exchange transactions

The Council for Geoscience received grants in the form of assets and baseline allocation from government departments.

Revenue from non-exchange transactions is recorded as deferred income when it is received and it is then recognised as income on a systematic basis over the period necessary to match this revenue with the related costs which it is intended to compensate. The conditions for the use of each revenue from non-exchange transactions are stated in each contractual agreement. Government refers to government, government agencies and similar bodies whether local, national or international.

## 1 Accounting policies (continued)

### 1.2.3 Recognition of income from contracts

Revenue from contracts represents the invoiced value of goods supplied by the Council for Geoscience. Income from contracts is recognised by means of progress payments over the duration of the contracts. Income for contracts in progress is recognised when it can be invoiced. When the outcome of a contract can be estimated reliably, revenue is recognised by reference to the stage of completion of the contract activity.

### 1.3 Interest received

Interest is recognised on a time proportionate basis with reference to the principal amount receivable and the effective interest rate applicable.

### 1.4 Property and equipment

The cost of an item of fixed assets is recognised as an asset when:

- it is probable that future economic benefits associated with the item will flow to the Council for Geoscience; and
- the cost of the item can be measured reliably.

Costs include costs incurred initially to acquire or construct an item of fixed assets and costs incurred subsequently to add to, replace part of, or service it. If a replacement cost is recognised in the carrying amount of an item of fixed assets, the carrying amount of the replaced part is derecognised.

Fixed assets are carried at cost less accumulated depreciation and any impairment losses.

Day to day expenses incurred on property and equipment are expensed directly to surplus and deficit for the period.

Major maintenance that meets the recognition criteria is capitalised.

Depreciation is provided on all fixed assets other than freehold land, to write down the cost, less residual value, by equal installments over their useful lives, as follows:

Land	Not depreciable
Buildings	30 years
Motor vehicles	5–8 years
Equipment	5–7 years
Aircraft and helicopter - Body	10 years
Aircraft and helicopter - Components	Useful hours per Civil Aviation Authority
Boat	10 years
Office furniture	20 years
Computer equipment	8 years

The depreciation charges for each period are recognised in the statement of financial performance, unless included in the carrying amount of another asset.

The useful lives and residual values are reviewed on an annual basis and changes are reflected as change in accounting estimates on a prospective basis.



## 1 Accounting policies (continued)

### 1.5 Intangible assets

An intangible asset is recognised when:

- it is probable that the expected future economic benefits that are attributable to the asset will flow to the entity; and
- the cost of the asset can be measured reliably.

Capitalised computer software is carried at cost less accumulated amortisation and less accumulated impairment losses. Computer software is tested annually for impairment or changes in estimated future benefits. Amortisation is provided to write down the intangible assets to their residual, on a straight-line basis, being two and five years.

### 1.6 Translation of foreign currencies

Foreign currency transactions

A foreign currency transaction is recorded, on initial recognition in Rands, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At each balance sheet date:

- foreign currency monetary items are translated using the closing rate.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous annual financial statements are recognised in the statement of financial performance in the period in which they arise.

Cash flows arising from transactions in a foreign currency are recorded in Rands by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

### 1.7 Research and development

Expenditure on research activities is recognised as an expense in the period in which it is incurred.

An internally generated intangible asset arising from research and development is recognised as part of intangible assets only if all of the following conditions are met:

- An asset is created that can be identified;
- It is probable that the asset created will generate future economic benefits;
- The development cost of the asset can be measured reliably;
- It is technically feasible to complete the intangible asset so that it will be available for use or sale;
- The ability to use or sell the intangible asset; and
- It is the intention to complete the intangible asset so that it will be available for use or sale.

Where no internally generated intangible asset can be recognised, development expenditure is recognised as an expense in the period in which it is incurred. Internally generated assets are amortised on a straight-line basis over their useful lives.

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

### 1 Accounting policies (continued)

#### 1.8 Deferred income

Deferred income is recognised using the accrual basis and accounted for in the statement of financial performance in the period in which it satisfies the recognition criteria to be recognised as revenue.

#### 1.9 Retirement benefit costs

##### Short-term employee benefits

The cost of short-term employee benefits (those payable within 12 months after the service is rendered, such as bonuses, paid vacation leave and sick leave) is recognised in the period in which the service is rendered and is not discounted.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs.

##### Defined contribution and defined benefit plans

The Council for Geoscience operates both a defined contribution pension and provident fund and a defined benefit plan in respect of post-retirement medical-aid contributions. For the defined benefit plan, the defined benefit obligation and the related current service cost is determined by using the projected unit credit method. The defined benefit plan is subject to an annual actuarial valuation.

The actuarial gains or losses are further limited to the extent that the net cumulative unrecognised actuarial gains or losses (before recognition of that actuarial gain or loss) exceed the unrecognised part of the transactional liability. Payments to defined contribution retirement benefit plans are charged to the statement of financial performance in the year to which they relate.

#### 1.10 Provisions and contingent liabilities

Provisions are recognised when:

- the entity has a present obligation as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation; and
- a reliable estimate can be made of the obligation.

The amount of a provision is the present value of the expenditure expected to be required to settle the obligation.

## 1 Accounting policies (continued)

### 1.11 Financial instruments

#### Initial recognition

The entity classifies financial instruments, or their component parts, on initial recognition as a financial asset, a financial liability or an equity instrument in accordance with the substance of the contractual arrangement.

Financial assets and liabilities are recognised on the entity's statement of financial position when the Council for Geoscience becomes party to the contractual provisions of the instrument.

Financial assets and liabilities are recognised initially at fair value.

#### Derecognition of financial instruments

The entity derecognises a financial asset only when the contractual rights to the cash flows from the asset expire; or it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity.

The entity derecognises financial liabilities when, and only when, the entity's obligations are discharged, cancelled or they expire.

#### Impairment of loans and receivables

Financial assets are assessed for indicators of impairment at each balance sheet date. Financial assets are impaired where there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial asset, the estimated future cash flows of the investment have been impacted.

The carrying amount of trade receivables is reduced through the use of an allowance account (bad debt provision). When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognised in surplus or deficit.

#### Financial assets carried at amortised cost

Loans and receivables are measured at amortised cost less any impairment losses recognised to reflect irrecoverable amounts. Impairment is determined on a specific basis, whereby each asset is individually evaluated for impairment indicators. Write-offs of these assets are expensed in surplus or deficit.

#### Cash and cash equivalents

Cash and cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash. Cash and cash equivalents are measured at fair value.

#### Financial liabilities carried at amortised cost

Trade and other payables are classified as other financial liabilities.

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

### 1 Accounting policies (continued)

#### 1.12 Operating leases

Leases of assets under which all the risks and rewards of ownership are effectively retained by the lessor are classified as operating leases. Lease payments under an operating lease are recognised as an expense on a straight-line basis over the lease term.

Any contingent rents are expensed in the period they are incurred.

#### 1.13 Impairment

The entity assesses at each balance sheet date whether there is any indication that an asset may be impaired. If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. The recoverable amount of an asset is the higher of fair value less costs to sell and its value in use.

If the recoverable amount of an asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. That reduction is an impairment loss recognised immediately in surplus or deficit.

At each reporting date the entity assesses impairment losses recognised in prior years for continued existence or decreases. If any such indication exists, the recoverable amounts of those assets are estimated. The increase in the carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset in prior periods. A reversal of an impairment loss of assets carried at cost less accumulated depreciation or amortisation is recognised immediately in surplus or deficit.

#### 1.14 Critical accounting estimates and judgements

##### Provision for bad debts

Past experience indicates a reduced prospect of collecting debts over the age of two years. Debtors balances older than two years are regularly assessed by management and provided for in line with the policy.

##### Provisions

Provisions were raised and management determined an estimate based on the information available and in line with the policy.

##### Property and equipment

Management has made certain estimations with regard to the determination of estimated useful lives and residual values of items of property and equipment.

##### Leases

Management has applied its judgement to classify all lease agreements that the entity is party to as operating leases, as they do not transfer substantially all risks and rewards to the entity. Furthermore, as the operating lease in respect of premises is only for a relatively short period of time, management has made a judgement that it would not be meaningful to classify the lease into separate components for the land and for the buildings for the EVN Africa's current lease, and the agreement will be classified in its entirety as an operating lease.



## 1 Accounting policies (continued)

### 1.15 Sources of estimation uncertainty

There are no key assumptions concerning the future and other key sources of estimation uncertainty at the balance sheet date that could have a significant risk of causing material adjustment to the carrying amounts of assets and liabilities within the next financial year.

## 2 Property and equipment

2010	Land	Buildings	Equipment	Office furniture	Aircraft and boat	Motor vehicles	Computer equipment	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Gross carrying amount	18,231	115,848	98,942	2,018	18,874	10,962	18,574	283,449
Accumulated depreciation at the beginning of the period	-	(13,109)	(57,608)	(240)	(5,920)	(5,971)	(12,589)	(95,437)
Accumulated impairment at the beginning of the period	-	(629)	-	-	-	-	-	(629)
<b>Opening net carrying amount at 31 March 2009</b>	18,231	102,110	41,334	1,778	12,954	4,991	5,985	187,383
Movements during the period:								
Acquisitions	-	19,837	6,544	36	792	2,957	521	30,687
Disposals	-	-	(13)	-	(341)	(16)	-	(370)
Disposals - Cost	-	-	(130)	-	(411)	(153)	(6)	(700)
Disposals - Depreciation	-	-	117	-	70	137	6	330
Depreciation	-	(3,937)	(5,477)	(95)	(1,091)	(745)	(1,343)	(12,688)
<b>Closing net carrying amount at 31 March 2010</b>	18,231	118,010	42,388	1,719	12,314	7,187	5,163	205,012
Gross carrying amount	18,231	135,685	105,356	2,054	19,255	13,766	19,089	313,436
Accumulated depreciation	-	(17,046)	(62,968)	(335)	(6,941)	(6,579)	(13,926)	(107,795)
Accumulated impairment	-	(629)	-	-	-	-	-	(629)

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

## 2 Property and equipment (continued)

2009	Land	Buildings	Equipment	Office furniture	Aircraft	Motor vehicles	Computer equipment	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Gross carrying amount	18,231	115,378	84,821	1,713	15,866	12,508	17,337	265,854
Accumulated depreciation at the beginning of the period	-	(9,323)	(53,766)	(154)	(4,834)	(6,704)	(11,909)	(86,690)
<b>Opening net carrying amount at 31 March 2008</b>	18,231	106,055	31,055	1,559	11,032	5,804	5,428	179,164
Movements during the period:								
Acquisitions	-	470	15,196	305	6,062	4	1,675	23,712
Disposals	-	-	(54)	-	(2,011)	(155)	(21)	(2,241)
Disposals - Cost	-	-	(1,075)	-	(3,054)	(1,550)	(438)	(6,117)
Disposals - Depreciation	-	-	1,021	-	1,043	1,395	417	3,876
Impairment	-	(629)	-	-	-	-	-	(629)
Depreciation	-	(3,786)	(4,863)	(86)	(2,129)	(662)	(1,097)	(12,623)
<b>Closing net carrying amount at 31 March 2009</b>	18,231	102,110	41,334	1,778	12,954	4,991	5,985	187,383
Gross carrying amount	18,231	115,848	98,942	2,018	18,874	10,962	18,574	283,449
Accumulated depreciation	-	(13,109)	(57,608)	(240)	(5,920)	(5,971)	(12,589)	(95,437)
Accumulated impairment	-	(629)	-	-	-	-	-	(629)

The transfer of the following land and buildings as stipulated under section 26 of the Geoscience Act (Act No. 100 of 1993) has not yet been completed.

Location	Fair value
474 Carl Street, Town Lands 351JR, Pretoria West	R 2,800,000
Portion of stand 110, 21 Schoeman Street, Polokwane	R 350,000

The fair value (deemed cost at initial recognition) of these properties has been included in the carrying amount of land and buildings as at 31 March 2010.

Details regarding land and buildings are kept at the Council for Geoscience head office and will be supplied upon written request.

2010  
R'0002009  
R'000

### 3 Intangible assets

#### Computer software

Gross carrying amount	13,565	7,065
Accumulated amortisation	(5,476)	(4,334)
<b>Opening net carrying amount at 31 March</b>	<b>8,089</b>	<b>2,731</b>
Movements during the period:		
Acquisitions	635	6,500
Amortisation	(1,545)	(1,142)
<b>Closing net carrying amount at 31 March</b>	<b>7,179</b>	<b>8,089</b>
Gross carrying amount	14,200	13,565
Accumulated amortisation	(7,021)	(5,476)

### 4 Retirement benefit

#### 4.1 Post-retirement medical-aid fund

The Council for Geoscience has made provision for the medical-aid fund covering substantially all its employees. All eligible employees are members of the defined benefit scheme. The asset of this scheme is now held in and administered by the Council for Geoscience as a result of withdrawal of the plan asset by the Council for Geoscience in January 2009. The scheme asset consists of long-term investment held with Nedbank.

During the previous year curtailments and benefits estimated at R20,005,000 were paid out to eligible members and a proportionate share of the unrecognised actuarial gains and losses was realised through surplus and deficit.

#### The amount recognised in the statement of financial performance is determined as follows:

Current service costs	468	1,691
Interest charge	1,457	3,242
Actuarial (gain)/loss recognised	(472)	741
Recognition of loss on asset realisation	-	333
	<b>1,453</b>	<b>6,007</b>

#### The amount included in the statement of financial position arising from Council for Geoscience obligation in respect of PRMC is as follows:

Present value of fund obligations	16,673	16,794
Unrecognised actuarial loss	3,276	2,044
Asset recognised in statement of financial position	<b>19,949</b>	<b>18,838</b>

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

2010  
R'0002009  
R'000

## 4 Retirement benefit (continued)

Movement in net liability during the year is as follows:	2010				2009			
	Liability	Planned asset	Unrecognised actuarial gain	Net	Liability	Planned asset	Unrecognised actuarial (loss)/gain	Net
Liability at beginning of period	16,794	-	-	16,794	34,608	-	-	34,608
Value of planned assets at beginning of period	-	-	-	-	-	(33,115)	-	(33,115)
Value of unrecognised actuarial gain/(loss) at beginning of period	-	-	2,044	2,044	-	-	(1,439)	(1,439)
Interest charge/expected return of planned asset	1,457	-	-	1,457	3,242	-	-	3,242
Current service costs	468	-	-	468	1,691	-	-	1,691
Benefits paid	(814)	-	-	814	(680)	680	-	-
Curtailment	-	-	-	-	(19,325)	-	-	(19,325)
Loss/(gain) recognised on realisation of planned asset	-	-	-	-	-	333	-	333
Actuarial loss/(gain)	(1,232)	-	1,232	-	(2,742)	-	2,742	-
Actuarial loss/(gain) recognised on curtailment	-	-	-	-	-	-	741	741
Receipt of planned asset returned	-	-	-	-	-	32,102	-	32,102
	16,673	-	3,276	19,949	16,794	-	2,044	18,838

## 4.2 Pension and Provident fund benefits

The Council for Geoscience and its employees contribute to a defined contribution plan. The assets of the scheme are held separately from the Council for Geoscience in funds under the control of trustees. The total cost charged to income of R6,496,718 (2009: R5,981,802) represents equal contributions of 7.5% by the employer and employee.

## 5 Trade and other receivables

Trade receivables	26,581	25,434
Trade receivables - Retention	7,801	5,585
Contract customers	21,214	48,429
Other receivables	275	706
Prepaid expenses	168	235
Personnel debt	70	60
	56,109	80,449
Less - Provision for bad debts	(57)	(805)
	56,052	79,644

2010  
R'0002009  
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## 5 Trade and other receivables (continued)

Provision for bad debts		
Opening balance	805	913
Movement	(748)	(108)
Closing balance	57	805
Average ageing	4.5 years	3.2 years

**Fair value of trade and other receivables**

Fair values of trade and other receivables are determined at a price charged at transaction date and impaired when indicators of impairment are present. At period end there were no differences between the book value and the fair values of trade and other receivables because of the short-term maturity.

## 6 Cash and cash equivalents

Cash and cash equivalents at the end of the period are represented by the following balances:

Cash at bank	22,415	15,977
Call accounts	70,595	97,521
Cash and cash equivalents at the end of the period are represented by the following balances:	93,010	113,498

There is no difference between the fair value of cash and cash equivalents and their book value.

## 7 Revenue from non-exchange transactions

Carrying amount at the beginning of period	91,006	94,342
Recognised as income	(2,666)	(3,336)
Carrying amount at the end of period	88,340	91,006

## 8 Trade and other payables

Trade payables	4,735	5,988
Other payables	10,753	6,252
Medical-aid employee fund	63	3,482
	15,551	15,722

**Fair value of financial instruments**

Fair values of trade and other payables are determined at a price charged at transaction date and impaired when indicators of impairment are present. At period end there were no differences between the book value and the fair values of trade and other payables.



2010  
R'0002009  
R'000

## 9 Deferred income

Deferred income arising as a result of an agreement entered into with the Department of Mineral Resources to develop and implement various measures to mitigate the effect of mining-induced contamination of the groundwater in the Witwatersrand area. A.

Carrying amount at the beginning of period	882	6,968
Interest earned	51	138
Amounts used during the period	-	(6,224)
Carrying amount at the end of period	933	882

Deferred income arising as a result of an agreement entered into with the Department of Mineral Resources to develop and implement Small-Scale Mining programmes.

Carrying amount at the beginning of period	-	55,693
Amounts used during the period	-	(57,757)
Interest earned	-	2,064
Carrying amount at the end of period	-	-

Deferred income arising as a result of an agreement entered into with the Department of Mineral Resources to develop and implement the closing of mine holes.

Carrying amount at the beginning of period	6,281	8,942
Amounts used during the period	(3,743)	(3,273)
Interest earned	295	612
Carrying amount at the end of period	2,833	6,281

Deferred income arising as a result of a contract entered into with the Lesotho ARF Project.

Carrying amount at the beginning of period	-	53
Amounts used during the period	-	(53)
Carrying amount at the end of period	-	-

Deferred income arising as a result of an agreement with the Department of Mineral Resources in terms of the Sustainable Development Through Mining project.

Carrying amount at the beginning of period	1,716	9,080
Amounts used during the period	(1,023)	(8,066)
Interest earned	99	702
Carrying amount at the end of period	792	1,716

Deferred income arising as a result of an agreement with the Department of Science and Technology in terms of a Scoping Study for a National Mineral Resources Assessment.

2010  
R'0002009  
R'000

## 9 Deferred income (continued)

Carrying amount at the beginning of period	1,750	1,588
Amounts received	1,000	-
Amounts used during the period	(1,788)	-
Interest earned	76	162
Carrying amount at the end of period	1,038	1,750

Deferred income arising as a result of an agreement with the Department of Cooperative Governance and Traditional Affairs for establishing a South Africa Tsunami Early Warning System.

Carrying amount at the beginning of period	539	1,272
Amounts used during the period	(347)	(733)
Carrying amount at the end of period	192	539

Deferred income arising as a result of an agreement with the National Research Foundation and Norway Research Cooperation Programme for research in environmental analytical chemistry.

Carrying amount at the beginning of period	215	215
Amounts used during the period	(215)	-
Carrying amount at the end of period	-	215

Deferred income arising as a result of an agreement with the Bureau of Research Geology and Mines and 7th European Framework Programme for the sustainable use of resources of geological origin.

Carrying amount at the beginning of period	730	-
Amounts used during the period	(730)	-
Amounts received	587	730
	587	730

Deferred income arising as a result of an agreement with the Department of Science and Technology to study the Witwatersrand Central Basin Mine Water Apportionment.

Carrying amount at the beginning of period	1,386	1,386
Carrying amount at the end of period	1,386	1,386

Deferred income arising as a result of an agreement entered into with the Department of Mineral Resources to develop and implement various measures to mitigate the effect of mining-induced contamination of the groundwater in the Witwatersrand area. B.

Carrying amount at the beginning of period	34,372	15,386
Amounts received	17,600	17,178
Amounts used during the period	(17,406)	-
Interest earned	1,720	1,808
Carrying amount at the end of period	36,286	34,372

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

2010  
R'0002009  
R'000

## 9 Deferred income (continued)

Deferred income arising as a result of an agreement with the Department of Science and Technology to establish an international collaboration research project on the Karoo sequences in South Africa, Botswana and Namibia.

Carrying amount at the beginning of period	364	364
Amounts used during the period	(354)	-
Carrying amount at the end of period	10	364

Deferred income arising as a result of an agreement entered into with the National Research Foundation

Amounts received	55	-
Carrying amount at the end of period	55	-

Deferred income arising as a result of pre-funding for the Uganda Project.

Amounts received	1,049	-
Carrying amount at the end of period	1,049	-
	45,161	48,235

## 10 Accruals

**Accruals for leave pay**

Carrying amount at the beginning of period	6,776	5,216
Provision current period	(98)	2,139
Amounts used during the current period	(350)	(579)
Carrying amount at the end of period	6,328	6,776

The leave pay provision relates to the estimated liabilities as a result of leave days due to employees.

## 11 Deficit/surplus from operations

Operating deficit/surplus is arrived at after taking the following items into account:

**Revenue**

Government grant - core funding	132,677	122,672
Government grant recognised	2,666	3,336
Contracting revenue	62,595	110,602
Publication revenue	650	919
	198,588	237,529

2010  
R'0002009  
R'000

## 11 Deficit/surplus from operations (continued)

**Cost of contracts**

Direct cost	29,225	38,342
Personnel expenditure	17,360	17,646
	<b>46,585</b>	<b>55,988</b>

**Other operating income**

Foreign currency gains	1,718	7,716
Profit on disposal of fixed assets	12	503
Sundry income	2,702	1,775
	<b>4,432</b>	<b>9,994</b>

**Administrative expenses include -**

Audit remuneration	1,845	1,044
Audit fees		
- Current period	501	20
- Prior period	873	634
- Internal audit	310	390
- Fee for other services	161	-
Bad debts written off	710	59
Provision for bad debts	(748)	(109)
Depreciation - on owned assets	12,688	12,623
- Buildings	3,937	3,786
- Equipment	5,477	4,863
- Office furniture	95	86
- Motor vehicles	745	662
- Aircraft	1,091	2,129
- Computer equipment	1,343	1,097
Amortisation - intangible assets		
- Computer software	1,545	1,142
Rentals in respect of operating leases		
- Land and buildings	1,500	715
- Photocopying machines	2,422	1,156

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

2010  
R'0002009  
R'000

## 11 Deficit/surplus from operations (continued)

**Other operating expenses**

Net loss on disposal of equipment	369	2,241
Impairment on buildings	-	629
Foreign currency losses	12,135	10,399
	<b>12,504</b>	<b>13,269</b>

Staff costs	<b>126,125</b>	<b>131,013</b>
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Included in staff costs are:

Defined benefit plan expense for the post-retirement medical-aid fund

	1,453	6,007
Current service cost	468	1,691
Interest cost	1,457	3,242
Recognised actuarial loss	(472)	1,074

- Defined contribution plan expenses for the pension and provident fund

<b>6,497</b>	<b>5,982</b>
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**Emoluments**

2009/2010

Senior management	Pensionable salary R	Provident fund contributions R	Performance bonus R	Other contributions R	Total R
Ramontja T	1,442,866	97,617	-	254,628	1,795,111
Matsepe L D	911,561	54,617	-	39,070	1,005,248
Ramagwede L F	854,513	64,199	-	204,432	1,123,144
Graham G	854,513	64,199	-	259,372	1,178,084
Zawada P K	854,516	64,892	-	255,846	1,175,254

2008/2009

Senior management	Pensionable salary R	Provident fund contributions R	Performance bonus R	Other contributions R	Total R
Ramontja T	1,225,557	86,194	144,469	365,627	1,821,847
Matsepe L D	665,522	51,901	78,350	245,961	1,041,734
Ramagwede L F	796,095	61,677	103,997	309,526	1,271,295
Graham G	790,418	61,677	101,917	247,162	1,201,174
Zawada P K	796,098	61,677	90,131	223,044	1,170,950

Management Board member - T. Ramontja



2010  
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## 11 Deficit/surplus from operations (continued)

**Management Board emoluments****Non-executive Board members**

Ngoepe P E	129,839	133,955
Nkuna A P	52,253	13,440
Barton J M (Jr)	71,278	86,250
Hieber R W	37,447	-
Smith M	14,176	-
Mthimunya K R	21,609	-
	<u>326,602</u>	<u>233,645</u>

Details regarding Management Board members service contracts:

Management Board members representing government departments are not included above as they received no emoluments.

The current term of office of the non-executive Management Board members expires on 30 September 2012.

2010  
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## 12 Interest received

Interest received		
- Interest income on call accounts	1,911	4,904
- Interest income on current accounts	299	1,681
	<u>2,210</u>	<u>6,585</u>

## 13 Finance cost

Interest	<u>8</u>	<u>15</u>
----------	----------	-----------

## 14 Reconciliation of net surplus for the period to cash generated from operations

Net (deficit)/surplus for the period	(22,113)	1,517
Adjustments for -		
Interest	8	15
Depreciation on property and equipment	12,688	12,623
Amortisation - intangible assets	1,545	1,142
Impairment on buildings	-	629
Government grant recognised	(2,666)	(3,336)
(Net proceeds) on disposal of fixed assets	(12)	(503)
Net loss on disposal of fixed assets	369	2,241
Increase in provision for bad debts	(748)	(109)
Interest earned	(2,210)	(6,585)
Provision for post-retirement medical-aid benefits	1,112	18,784
Operating cash flows before working capital changes	<u>(12,027)</u>	<u>26,418</u>

Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

	2010 R'000	2009 R'000
<b>14 Reconciliation of net surplus for the period to cash generated from operations (continued)</b>		
Working capital changes -		
Increase in provision for accumulated leave pay	(448)	1,560
Decrease/(increase) in trade and other receivables	24,340	(1,396)
(Decrease) in trade and other payables	(171)	(8,492)
(Decrease) in deferred income	(3,074)	(52,712)
Cash generated from operations	8,620	(34,622)

**15 Acquisition of:****15.1 Property and equipment**

Land and buildings	19,837	470
Equipment	6,544	15,196
Office furniture	36	305
Aircraft and boat	792	6,062
Motor vehicles	2,957	4
Computer equipment	521	1,675
	30,687	23,712

**15.2 Intangible assets**

Computer software	635	6,500
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**16 Contingent liability****16.1 Bank guarantees**

Performance bonds and bid bonds issued for contract work to various financial institutions.

4,717	4,740
-------	-------

**16.2 Retention on projects**

Changing Geological Mapping services project may result in penalties to the Council for Geoscience due to various delays experienced in the delivery of the project. The client has withheld payment to the amount of €750,000 (R7,8 million) as a retainer for costs such as this penalty. The European Union is yet to determine the amount of the penalty, if any. The maximum total penalty allowed is €44,300 (R440,000).

2010  
R'0002009  
R'000

## 16 Contingent liability (continued)

## 16.3 Litigation

Citation of parties	Description	Status of the matter		
CGS/Employee	Labour Court claim in which the claimant seeks promotion.	The matter has been enrolled for the hearing at the High Court on the 18 <sup>th</sup> June 2009 and was postponed <i>sine die</i> .	1,000	1,000
			5,717	5,740

## 17 Taxation

No provision for income tax was made as the Council for Geoscience is exempted in terms of section 10(1) (Ca)(i) of the Income Tax Act.

## 18 Operating lease commitments

## 18.1 EVN Africa

At reporting date, the outstanding commitments under non-cancellable operating leases, which fall due are as follows:

Up to 1 year	328	328
Total lease commitments	328	328

The Council for Geoscience is leasing office premises from EVN Africa for a period of 1 year with an extension option, effective from 1 April 2010 for average lease payments of R27,360 (VAT inclusive) per month.

## 18.2 Xerox/Bytes Technology

At the reporting date, the outstanding commitments under non-cancellable operating leases, which fall due are as follows:

Up to 1 year	1,535	1,524
2 to 5 years	1,407	2,540
Total lease commitments	2,943	4,064

**Contingent rentals are determined as follows:**

Black and white prints/images made in excess of 100,000 per month are charged at R0,09 and colour prints/images made in excess of 30,000 per month are charged at R0,62 (VAT inclusive) per copy.

All prints/images below 100,000 and 30,000 for black and white and colour respectively are included in the fixed monthly rental of R112,234 (2009/10) and R111,400 (2008/09).

## 19 Financial instruments

Financial instruments consist of cash and cash equivalents, investments with financial institutions, trade and other receivables and trade and other payables.

### 19.1 Credit risk

Financial assets, which potentially subject the Council for Geoscience to concentrations of credit risk, consist principally of cash, short-term deposits and trade receivables. The Council for Geoscience's cash equivalents and short-term deposits are placed with high credit quality financial institutions. Trade receivables are presented net of the allowance for doubtful debts. Credit risk with respect to trade receivables is limited due to the large number of customers being dispersed across different industries and geographical areas. Accordingly the Council for Geoscience has no significant concentration of credit risk.

The carrying amounts of financial assets included in the statement of financial position represent the Council for Geoscience's exposure to credit risk in relation to those assets.

Trade and other receivables are controlled by well-established policies and procedures which are reviewed and updated on an ongoing basis. The Council for Geoscience does not have any significant exposure to any individual customer or counterparty.

### 19.2 Interest rate risk

The organisation's exposure to interest rate risk and the effective interest rates on the financial instruments at reporting date are:

31 March 2010

	Weighted average effective interest rate %	Weighted average effective interest rate %
<b>Assets</b>		
Cash	5.62%	9.76%
Call accounts	7.79%	11.54%

#### Investments

The risk is perceived to be low due to the following factors:

- Funds are only invested with approved financial institutions according to the policy of the Council for Geoscience, as was approved by the Management Board.
- Investments are only reinvested or invested with Executive Management approval.

### 19.3 Foreign currency risk

The Council for Geoscience undertakes certain transactions denominated in foreign currencies, hence exposures to exchange rate fluctuations arise. It is not policy for the Council for Geoscience to take out cover on these outstanding foreign currency transactions due to the fact that these transactions take place on an ad-hoc basis. The Council for Geoscience exposure at 31 March 2010 is disclosed in note 21.

2010  
R'0002009  
R'000

## 19 Financial instruments (continued)

### 19.4 Airborne operations risk

Risk in respect of the airborne operations of the Council for Geoscience has been identified and transferred to third parties, namely insurance and an external operator.

## 20 Capital commitments

Commitments for the alterations of property and equipment

- Approved and contracted for

ERP System

Drilling rig and trucks

Building - Bellville

	9,000	38,600
	9,000	9,000
	-	4,500
	-	25,100

The commitments will be funded from internal resources.

## 21 Foreign currency exposure

### 21.1 Trade receivables

	2010 R'000			2009 R'000		
	Exchange rate	Foreign amount	R-value	Exchange rate	Foreign amount	R-value
Foreign currency						
Ghanian Cedi	R 5.28200	¢ 53	R 279	R 6.96290	¢ 39	R 272
Madagascan Ariary	R 0.00342	Ar 4,371	R 15	R 0.00482	Ar 4,371	R 21
Moroccan Dirham	-	-	-	-	-	-
Euro	R 9.91300	€ 1,761	R 17,453	R 12.62100	€ 1,491	R 18,819
US\$	R 7.39260	\$ 569	R 4,208	R 9.48200	\$ 74	R 702

### 21.2 Banks

	2010 R'000			2009 R'000		
	Exchange rate	Foreign amount	R-value	Exchange rate	Foreign amount	R-value
Foreign funds						
Ghanian Cedi	R 5.28200	¢ 48	R 254	R 6.96290	¢ 10,806	R 75,243
Madagascan Ariary	R 0.00342	Ar 638	R 2	R 0.00482	Ar 763	R 4
Moroccan Dirham	R 0.89470	DH 7,527	R 6,740	R 1.15470	DH 7,862	R 9,078
Euro	R 9.91300	€ 1,272	R 12,610	R 12.62100	€ 332,315	R 4,194



Council for Geoscience

## Notes to the Financial Statements for the period ended 31 March 2010

2010  
R'0002009  
R'000

## 22 Related-party transactions

During the period, the following related-party transactions took place between the Council for Geoscience and the Department of Mineral Resources:

Sales of goods and services	25,951	19,449
Deferred income	40,843	17,178

During the period, the following related-party transactions took place between the Council for Geoscience and the Department of Science and Technology:

Sales of goods and services	354	-
Deferred income	1,048	-

Refer to note 9 for further details regarding deferred income transactions.

The Council for Geoscience offers geoscience services to government departments.

Government grants:

Revenue	132,677	122,672
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Emoluments are also related-party transactions, refer to note 11.

## 23 Forensic investigation

Price Waterhouse Coopers Advisory Services (Pty) Ltd. (PWC) was engaged to conduct a forensic investigation into a contract of the Marine Geoscience Unit (MGU). PWC was mandated to do the following:

- i) Establish if there are any private deals and if there was money paid to the Council for Geoscience employees privately as a result of these deals;
- ii) Quantify the amount of loss to the MGU and determine if it is recoverable;
- iii) Confirm if there is any collusion between the employees of the unit and service providers; and
- iv) Make appropriate recommendations to remedy the situation and/or implement applicable measures to curb such practices if they exist.

The period covered by the investigation is from February 2008 to 30 September 2009.

PWC presented a report of its investigation including findings, conclusions and recommendations to the Audit and Risk Committee on the 24th May 2010.

2010  
R'0002009  
R'000

## 24 Reconciliation between budget and statement of financial performance

Net surplus/deficit per the statement of financial performance	(22,113)	-
Adjusted for:		
Revenue	40,898	-
Operating income	1,576	-
Surplus on the sale of assets	369	-
Decreases in provisions	(748)	-
Bad debts	710	-
Foreign exchange	10,417	-
Depreciation	204	-
Personnel expenditure	(1,764)	-
Direct projects costs - Commercial Local	(13,758)	-
Direct projects costs - Commercial Foreign	(6,519)	-
Direct projects costs - Statutory	(8,089)	-
Overheads	(1,183)	-
Net surplus/deficit per approved budget	-	-

## 25 Fruitless and wasteful expenditure

**Fruitless and wasteful expenditure**

Fruitless and wasteful expenditure	2,957	-
	2,957	-

The Council for Geoscience (CGS) has a group life insurance for its employees in its name. This was allowed as a non-taxable benefit until 2002 when the tax legislation changed. The CGS did not effect this change and did not withhold tax from employees. This resulted in the CGS owing SARS an amount of R2,957,000. The CGS investigated, identified and disclosed this matter to SARS. After lengthy consultation and quantification of the omission, which was finalised in November 2009, it was established that the CGS should have withheld tax from its employees. It would have been impractical to recover the outstanding tax from employees. Based on this the CGS Board took a decision to pay this tax liability on behalf of the staff. Other internal considerations that the CGS was not doing well financially, cost-cutting measures that were implemented, its employees receiving minimal salary increases and no incentive bonuses informed the decision. This was a significant morale booster for the CGS staff and therefore an investment. The error has since been rectified, i.e. as of the 2011 tax year before the end of the reported financial period.

Council for Geoscience

## Value Added Statement for the period ended 31 March 2010

	2010 R'000	% Value added	2009 R'000	% Value added
<b>Value added</b>				
Government grant	132,677	111.3%	122,672	84.2%
Government grant recognised	2,666	2.2%	3,336	2.3%
Contracting revenue	62,595	52.5%	110,602	75.9%
Publication revenue	650	0.4%	919	0.6%
Revenue	198,588	166.5%	237,529	163.1%
Paid to suppliers for material and services	(85,979)	(72.1%)	(108,469)	(74.5%)
Interest earned	2,210	1.9%	6,585	4.5%
Other income	4,432	3.7%	9,994	6.9%
	119,251	100.0%	145,639	100.0%

		% Distributed		% Distributed
<b>Distributed as follows -</b>				
Employees	125,254	105.0%	127,903	87.8%
- Staff costs	110,846	93.0%	108,321	74.4%
- Employer contributions	11,264	9.4%	14,688	10.1%
- Bursary and training	3,144	2.6%	4,894	3.4%
Finance cost	8	-	15	-
Central and local government	1,869	1.6%	1,810	1.2%
Retention for expansion and growth	(7,880)	-6.6%	15,911	10.9%
- Depreciation	12,688	10.6%	12,623	8.7%
- Amortisation	1,545	1.3%	1,142	0.8%
- Impairment	-	0.0%	629	0.4%
- Retained (deficit)/surplus for the period	(22,113)	-18.6%	1,517	1.0%
	119,251	100.0%	145,639	100.0%

**Value added ratios**

- Number of employees	349	357
- Revenue per employee	R 569	R 665
- Wealth created per employee	R 342	R 408

Council for Geoscience

## World Cup Expenditure for the period ended 31 March 2010

### Tickets acquired

	2009/10	2008/9
	Quantity	R'000
<b>Distribution of tickets</b>	2009/10	2008/9
	Quantity	R'000
Clients/Stakeholders	-	-
Accounting Authority	-	-
Executive	-	-
Non-executive	-	-
Accounting Officer	-	-
Senior Management	-	-
Other employees	-	-
Family members of officials	-	-
Other government entities	-	-
Audit Committee members	-	-
Other	-	-
<i>Please specify</i>	-	-
<b>Total</b>	-	-

### Travel costs

	2009/10	2008/9
Clients/Stakeholders	-	-
Accounting Authority	-	-
Executive	-	-
Non-executive	-	-
Accounting Officer	-	-
Senior Management	-	-
Other employees	-	-
Family members of officials	-	-
Other government entities	-	-
Audit Committee members	-	-
Other	-	-
<i>Please specify</i>	-	-
	-	-

Council for Geoscience

## World Cup Expenditure for the period ended 31 March 2010 (continued)

	2009/10		2008/9
	Quantity	R'000	R'000
<b>Purchase of other world cup apparel</b>			
<i>Specify the nature of the purchase (e.g. t-shirts, caps, etc.)</i>	-	-	-
<i>Please specify</i>	-	-	-
	-	-	-
<b>Total world cup expenditure</b>		-	-

	Quantity	R'000
<b>Tickets acquired after period end (31 March 2010)</b>	-	-

	Quantity	R'000
<b>Distribution of tickets acquired after period end</b>		
Clients/Stakeholders	-	-
Accounting Authority	-	-
Executive	-	-
Non-executive	-	-
Accounting Officer	-	-
Senior Management	-	-
Other employees	-	-
Family members of officials	-	-
Other government entities	-	-
Audit Committee members	-	-
Other	-	-
<i>Please specify</i>	-	-
<b>Total</b>	-	-







# Highlights of Activities

OF THE COUNCIL FOR GEOSCIENCE

## Africa Collaboration

### Mozambique Publications Project

The Mozambique Publications Project is aimed at publishing some of the interesting research findings from the Mozambique Mapping Project that was conducted from 2000 to 2007. The publications project for 2009/10 focused on the geology of the margin between the Zimbabwe Craton and the Mozambique Belt in the area between the border of Zimbabwe and Mozambique and the town of Chimoio some 70 km to the east. A manuscript was submitted to the Journal of African Earth Sciences and was accepted for publication. A U/Pb zircon age of 1 000 Ma from migmatitic veining developed parallel to strong shearing along the craton margin is discussed, as well as a U/Pb zircon age of ~2 600 Ma from a relatively undeformed granodiorite that forms part of the Zimbabwe Craton. Whole-rock major- and trace-element chemistry from granites in the Zimbabwe Craton, as well as the Mozambique Belt, is described, as well as Rb/Sr and Sm/Nd radiogenic isotope data.

The latter radiogenic isotope data suggest that granitoids within the Mozambique Belt probably resulted from the mixing of melts derived from the Archaean-age Zimbabwe Craton and the younger Mozambique Belt. The data indicate that the Zimbabwe Craton has sub-surface extensions below the Mozambique Belt, at least as far east as Chimoio.

### National Research Foundation Cooperation between Mozambique and South Africa

The Council for Geoscience is involved in a regional National Research Foundation (NRF) cooperation project entitled 'The contribution of high-resolution aeromagnetic and gamma-ray data to identifying pegmatites and base-metal targets in the Alto Ligonha District, Zambezia Province, Mozambique'.

Three ground follow-up campaigns were conducted in November 2008, and in August and November 2009, based on the evaluation of existing high-resolution airborne magnetic and

gamma-ray data from the area under investigation. This follows from evaluation of the ground magnetic, electromagnetic and gamma-ray data, which revealed that in a number of cases pegmatite occurrences are associated with mostly inversely magnetised marker horizons.

By applying k-means cluster analysis to the airborne magnetic and gamma-ray data, areas of further exploration potential were identified in the Alto Ligonha Pegmatite Province. These were targeted and confirmed by the third ground follow-up campaign in November 2009.

The overall conclusion is that magnetic and gamma-ray survey data will have a pathfinder role in the future exploration of Mozambican fold-belt type pegmatites.

### Collaboration with Gabon

The Council for Geoscience, in a consortium with the Bureau de Recherches Géologiques et Minières (BRGM), Sanders Geophysics and the Royal Museum of Central Africa (MRAC), established a geological and mineral database for Gabon as part of a SYSMIN (System of Stabilisation of Export Earnings from Mining Products) project. The responsibilities of the Council for Geoscience involved the acquisition and processing of airborne data over large sections of Gabon, geological mapping and an industrial-minerals database. The Council for Geoscience has completed all of its flying in Gabon. The entire project is now complete and deliverables were officially handed over to SYSMIN in November 2009.

### SADC Hydrogeological Map

The Hydrogeological Map of the SADC region was completed in March 2010. This one-year project was sponsored by the European Union. The lithostratigraphic map was used as a base and simplified to retain only 12 basic lithological types. Aquifer characteristics were derived from the compilation of existing African hydrogeological maps, expert knowledge and the borehole database.

### Islamic Republic of Mauritania Exclusive Economic Zone

The Council for Geoscience undertook a preliminary assessment to determine whether the Islamic

Republic of Mauritania has the potential for an extended continental-shelf claim beyond the existing 200 nautical mile exclusive economic zone (EEZ).

This preliminary assessment indicated that there is indeed a potential for an extended continental shelf, with the extent of the potential claim area being strongly influenced by the northern maritime boundary of the Islamic Republic of Mauritania with Western Sahara.

The Council for Geoscience, in consultation with the National Oceanographic Centre of the United Kingdom, provided the necessary documentation such that the Islamic Republic of Mauritania could submit the required SPLOS/183 documentation to the Commission on the Limits of the Continental Shelf at the United Nations headquarters before the cut-off date of 12 May 2009.

## International Collaboration

### Japanese Antarctic Research Expedition Participation

The Council for Geoscience was invited to participate in Japanese Antarctic Research Expedition 51 (JARE51) to the Sør Rondane Mountains in Central Dronning Maud Land, Antarctica. The duration of the involvement extended from 15 November 2009 to 15 March 2010, with three months being spent in active field work in western and eastern Sør Rondane. The Sør Rondane area of Central Dronning Maud Land is thought to have been situated immediately south of northern Mozambique prior to the fragmentation of Gondwana, 180 Ma ago. Involvement in JARE51 has

The JARE51 geology team spent three months in tented camps mapping and collecting samples for petrological and geochronological research.





facilitated comparison of the geology of that area with the geology of northern Mozambique. Samples and data collected during the field season will form the basis of continued research collaboration between the Council for Geoscience and the National Polar Research Institute of Japan in Tokyo.

### Rare-Earth Element Resources Potential in South Africa

Rare-earth element (REE) resources have gained importance in recent years because of their use in high technology manufacturing and an apparent scarcity outside of China. Since China is restricting export of their rare-earth resources and there are limited known resources elsewhere, their increasing use in green technology (e.g. electric cars, etc.) has resulted in an increased demand and prices for rare-earth metals have risen sharply.

South Africa, though endowed with rare-earth element resources, some of which may have the potential to be mined, does not at present produce any of the metals. Participation in the production of this group of metals could earn the country significant revenue, in addition to creating jobs and, in this way, helping to alleviate poverty.

The Council for Geoscience is working in collaboration with the Japanese institutions JOGMEC (Japan Oil, Gas and Metals National Corporation) and AIST (National Institute of Advanced Industrial Science and Technology) to identify and evaluate the REE potential of selected sites in South Africa.

To date the project has identified several targets which appear to be suitably mineralised with respect to rare-earth elements, and geochemical data indicate that several of the targets from which the samples were collected possess significant levels of heavy rare-earth elements. Additional work on the best targets will help to confirm their significance.

Field sampling by geologists from South Africa and Japan to identify the rare-earth element potential of South Africa.

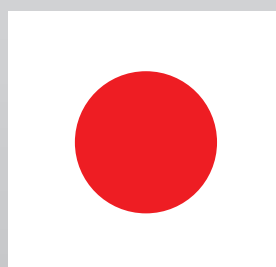


### National Research Foundation Cooperation between Italy and South Africa

As part of an induced polarisation (IP) joint research project with Italy, data obtained in Antrodoto (Abruzzo Region, Central Italy) and Torrate (Friuli Region, Northern Italy) were submitted to the Council for Geoscience for direct current (DC), IP and time-domain electromagnetic (TDEM) investigations. The DC and IP data were interpreted and the difference between the resistivity obtained by TDEM and DC methods was observed. For the interpretation, a comparison of petro-electrical properties of rocks was obtained by different methods (TDEM, DC and IP) and a model was created. A newly developed program has been tested using laboratory data. This program calculates the grain-size distribution of rocks. All profiles have been interpreted and the geo-electrical parameters of layers estimated. A geological model of the profiles was created.

With the purpose of studying the IP effect of hydrocarbon-contaminated rocks, laboratory measurements of partially and fully water-saturated samples were performed. These measurements showed that the physical properties of rocks have been changed both by the presence of contaminants in the water and because of the adsorption of hydrocarbon compounds by double electrical layers. The IP effects arising on different-shaped pores were modelled. Field work using IP and TDEM has been done by the Italian collaborators. Differences in the IP effect measured with different currents were shown.

The model has been calibrated using mercury tests. Mercury tests have been carried out on several samples in England. The mercury test allows the distinguishing of pore-size distribution in the large scale of pores. The comparison of pore-size distribution obtained by mathematical modelling and by the mercury test shows very good agreement between



the two methods, and provides large application of mathematical modelling for studying the internal structure of partially and fully water- and hydrocarbon-saturated rocks.

#### National Research Foundation Cooperation between Germany and South Africa

The objective of the South African/German NRF-funded project, 'Rapid automated integration of large high-resolution airborne geophysical data suites to compile lithological and structural maps', is to provide fast, largely automated and objective data integration and assessment, enabling geological mapping and identification of exploration targets using a combination of large airborne geophysical and other earth science-related data sets.

The approach is based on multivariate statistical analysis methods that will rapidly and objectively classify large sets of multi-parameter data into a number of groups, i.e. geological units. A priori knowledge of the kind of interrelationship between the various data sets to be integrated and classified is not required, which allows an automated classification of any combination of data sets. The immediate achievement of the proposed project will be a software package that will be used to transform large airborne geophysical data suites into geology-related data, displayed as easy-to-use digital interpretation maps.

The algorithms to perform different types of classification, based on crisp and fuzzy clustering techniques, have been completed. The software interface has been designed and is being coded. First results of the techniques were presented at the South African Geophysical Association conference in 2009 and have already been published by a peer-reviewed geophysical journal.

Currently, promising tests are underway to integrate airborne gamma-ray with Landsat satellite data sets and to classify them.

#### African-European Georesources Observation System – AEGOS

The AEGOS project is a support action of the European Union 7th Research and Technology Framework Programme in the category 'Georesource Information System for Africa'.

In the African continent, and in the broader African Caribbean Pacific (ACP) Group of States, the efficient and sustainable use of georesources, including groundwater, energy and mineral resources, is key for the development of Africa and as a means of alleviating poverty and underdevelopment.

A huge amount of geoscience data and information has been acquired by African research institutes and organisations over time, but the existing data and information assets are frequently difficult to identify and to access. One of the purposes of this project is to complement the existing information systems by providing georeferenced interoperable spatial data on Africa's geology and georesources and to develop human and technical capacity in Africa.

The African-European Georesources Observation System will aim at establishing an internet- or satellite-based data-broadcasting, open, distributed, shared, interoperable, multilingual observation system on georesources in Africa, as a contribution to the sustainable development of these countries and of the Global Earth Observation System of Systems (GEOSS).



Staff members programming a graphical interface at Potsdam University in Golm, Germany.







The objectives of the AEGOS Support Action are to define:

- i) operational procedures for data management (spatial data infrastructure, metadata and data specification)
- ii) user-oriented products and services, including the preparation of innovative spin-off projects based on AEGOS and an evaluation of the input of interoperability and interdisciplinarity in support of GEOSS
- iii) the African-European AEGOS partner network
- iv) a geoscience contribution to GEOSS, in the context of INSPIRE (Infrastructure for Spatial Information in Europe).

A number of workshops of the different Work Packages (WPs) of the project were attended by different staff members of the Council for Geoscience during the year under review. The organisation is involved in the following Work Packages:

WP 1: Spatial data infrastructure

WP 2: System architecture and specifications for hardware, software and network infrastructure

WP 6: Definitions of common strategies for capacity building and training

WP 7: AEGOS as a geoscientific contribution to GEOSS, in the context of the INSPIRE European directive

WP 8.5: Sustainable AEGOS infrastructure

WP 9: Information and dissemination system of the Support Action.

## Other Geological and Associated Mapping and Research

### Late Quaternary Reactivation – Kango Fault, South Africa

Several potential seismic-source zones have been determined for the main fault strands in the southern and eastern Cape Fold Belt. These are based on palaeoseismic results obtained along the Kango Fault and from recently published information on several deep seismic sections across the region, as well as the distribution of local seismicity. These results were presented together with trench stratigraphy, age dating and geophysics at the South African Geophysical Association and Inkaba yeAfrica conference and



workshop, held in Swaziland from 13 to 18 September 2009. Considerable interest was generated as little work has been done on neotectonics in South Africa, in particular in the Eastern Cape Province. This led to collaboration with the Potsdam University (and possibly also Jena University) in Germany regarding the modelling of gravity data across the Cape Isostatic Anomaly, in order to estimate potential uplift rates. In addition, the University of Pretoria's Space Geodesy Centre volunteered to install a GPS station on the anomaly to determine real uplift. Monitoring for vertical movement will be a long-term programme and the station location will also improve the current national geodetic network.

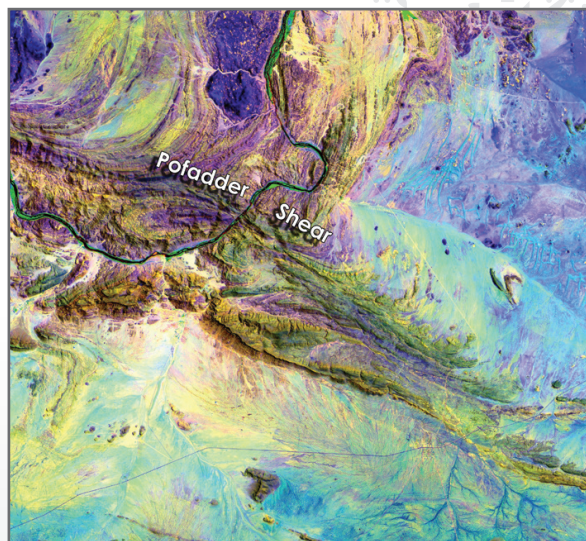
### The Marine Geology of Blood Reef

Research has been conducted by the Council for Geoscience on Blood Reef, the offshore extension of the Durban Bluff, for the past three years. This project involved a comprehensive geological investigation by the integration of seismic data, side-scan sonar data, multibeam bathymetry and geological mapping, which involved extensive scuba diving to -50 m. The seismic stratigraphy of the upper continental shelf was interpreted, a diagenetic history of beachrock and aeolianite cementation established and the depths of sea level indicators were correlated with local and global sea level curves. In addition, the Holocene sediment wedge of the shelf was sampled and described.

The geology of the Bluff Ridge and adjoining Blood Reef is dominated by Mid- to Late Pleistocene aeolianites deposited on a marine Cretaceous sequence. Subsequent beachrocks deposited on, and erosional features cut into, the aeolianites track a series of palaeocoastlines extending semi-continuously from the supratidal zone to the outer continental shelf, recording sea level fluctuations from the Last Interglacial period to the present.

### Architecture and Mineralisation of the Pofadder Shear Zone in Namaqualand

The Council for Geoscience is currently conducting research on the Pofadder Shear Zone, a transcurrent strike-slip crustal shear zone in the Northern Cape Province. The Pofadder Shear Zone is arguably the largest and best exposed shear zone in southern Africa



Aster satellite image of the Pofadder shear across the Orange River.

and can be followed for some 900 km from south-east of Pofadder in the Northern Cape, to Lüderitz in southern Namibia along the Atlantic seaboard.

Research in the Pofadder Shear Zone is aimed at staff development, which includes a field school, as well as developing the less understood concepts surrounding large-scale crustal shear zones. These concepts include the dynamics, architecture, timing, duration and kinematics, as well as the associated mineralisation of this shear zone and its significance to other shear zones in the world.

### 2D and 3D Geological Modelling of the Klerksdorp-Orkney-Stilfontein-Hartbeesfontein (KOSH) Goldfield

As part of the first objective in the Strategic Water Management project of quantifying groundwater and surface water ingress, 2D and 3D modelling was an integrated task of geological investigations in the Klerksdorp-Orkney-Stilfontein-Hartbeesfontein (KOSH) Goldfield in the North West Province. With the main objective of studying the impact of mining on the water resources, it is important to understand the relationship between the geology of the region and water movement, in order to create a holistic mitigation plan.

In the models, the geology of the KOSH basin, beginning with the Black Reef Formation, then the Malmani Subgroup, and through to the lower Pretoria Group is

shown. The Black Reef Formation is mostly composed of quartzite, shale and conglomerate. The Malmani Subgroup primarily consists of dolomite, quartzite, shale and andesite; the lower Pretoria Group (Rooihoogte, Timeball Hill, Hekpoort, Strubenkop and Daspoort Formations) comprises mainly conglomerate. The main interest was on the dolomitic package because of its porous nature and because dolomite is the main aquifer in the KOSH basin. According to the 2D and 3D models the dolomite can reach depths of more than 2 800 m within the basin. The dolomite is exposed on surface, creating a receptor of the mine-water pollution and transporting it towards groundwater because of its porous, aquifer-type nature. Synclinal and anticlinal folding of the strata indicate the morphology of the sedimentary basin in the KOSH area. The basin is deepest towards

the northeast. Several intrusions are present at different stratigraphic levels within both the dolomite package and the lower Pretoria Group rocks, and these intrusions have an influence on the groundwater transportation in the KOSH basin. Understanding the geology of the area, on plan and in three dimensions, offers one of the building blocks to the solution of the mine-water ingress situation.

### Assistance to the Nelson Mandela Bay Metropolitan Municipality

The Eastern Cape Unit regularly provides expert map-based advice to the Disaster Management Unit of the Nelson Mandela Bay Municipality. To date, this mainly addressed seismic-hazard issues to be included in their disaster management planning. More recently, the Council for Geoscience has started collaborating with the Metro to locate groundwater to help alleviate the current crisis related to the ongoing drought in the area, which is threatening the local population and business development in the region.

### Physical and Chemical Geohazards

#### Prevention of Human Access into Unsafe and Abandoned Mine Openings

The Council for Geoscience was contracted by the Department of Mineral Resources (DMR) to identify all known abandoned and unsafe mine openings occurring in the Gauteng, Limpopo and North West Provinces and to seal the most dangerous of these shafts.

A total of 900 unsafe and abandoned mine-related openings have been located in the Gauteng, Limpopo and North West Provinces, 700 of which are located in Gauteng. A total of 108 extremely dangerous openings, in and around Johannesburg, have been sealed. A proposal has been submitted to the DMR to rehabilitate another 145 mine openings in the three above-mentioned provinces over the next three years as a continuation of this project.

A certified, generic design for concrete plugs, consisting of polyurethane foam, was developed and can be used to seal a wide variety of mine openings. This product, which is widely used in the United States of America, offers a cost-effective, quick option to seal

Before: Abandoned, dangerous mine opening next to an informal settlement in Ekurhuleni.  
After: Landmarks placed on newly sealed shafts as reminders of the dangers of these shafts.





abandoned mine openings, particularly in rural areas where it is not possible to obtain concrete locally. A certified manual is being developed by the Council for Geoscience for use of the product in South Africa.

### Modelling of Run-off and Infiltration in the Witwatersrand Gold-mining Area

An attempt was made to model the surface run-off, cumulative infiltration and accumulated run-off in the Witwatersrand gold-mining area using the NRCS Curve Number method in ArcView GIS 3.3. The predictions of run-off and infiltrations will help to understand the amount of water leaving the area and the amount of water entering into the subsurface as recharge. Run-off and infiltration estimation, using the NRCS Curve Number method requires the spatial inputs of land use/land cover, soil type/hydrological soil group, rainfall distribution and values of initial abstraction or initial losses for each type of land use/land cover.

The areal extent of the hydrological modelling was decided after identifying both the extent of the gold-mining basins and that of the catchment/watershed boundaries, which could be deduced from the river network. The input maps of land use/land cover, soil, annual rainfall and SRTM elevation data covering the Witwatersrand gold-mining area were procured from the ARC Institute for Soil, Climate and Water, based in Pretoria.

The extracted accumulated run-offs of the catchments reveal that the total outlet of run-off from the KOSH basin is 2 147 483 646 m<sup>3</sup>. The volume of surface run-off water exiting other catchments were as follows: West Rand north: 96 527 368 m<sup>3</sup>; West Rand south: 142 640 368 m<sup>3</sup>; Central Rand: 574 200 512 m<sup>3</sup>; East Rand 1: 358 071 200 m<sup>3</sup>; East Rand 2: 122 162 408 m<sup>3</sup>; Evander North: 228 345 712 m<sup>3</sup>; Evander South: 310 630 688 m<sup>3</sup>.

### Application of Ecotoxicology in Geo-environmental Mapping

The production of geo-environmental maps is seen as a vital step towards disseminating information in an appropriate format to local governments in order to assist them with issues relating to land-use planning and environmental health-risk management.

The compilation of geo-environmental maps and risk maps requires both field work and laboratory research to understand the impacts of mining and other activities on soil, water, sediment and air. The scope and quantitative range of the geo-environmental maps vary, depending on the region and availability of information within the Council for Geoscience, such as water monitoring data, sediment contamination data, and data from the regional soil-sampling programme.

The application of ecotoxicology and environmental geochemical mapping has never before been attempted in South Africa. The Council for Geoscience is showing development in both these arenas and the combination of techniques will put the organisation in the position of being the leader in Africa with regard to geo-environmental studies.

The area selected for the first environmental risk assessment by the Council for Geoscience was the Mpumalanga coalfields. It was imperative that the staff familiarise themselves with this coal-mining area in order to be able to assist the Department of Mineral Resources in relation to questions raised at both local and national level with regard to the impact of mining on the environment and community. Field work and environmental laboratory experiments on some samples have been completed. More samples will be analysed to complete the environmental risk assessment for this area.

### Assessment of Sinkhole Formation Mechanism by Numerical Analysis

Sinkholes in karst terrains are caused by the collapse of natural or man-made cavities. These occur worldwide, with notable concentrations in South Africa, the eastern USA, Southeast Asia and Canada. In South Africa, sinkholes and dolines are amongst the most serious geological hazards in dolomitic terrains, particularly in the densely populated Gauteng Province and most of the Far West Rand area, situated in the North West Province. Assessing the mechanism by which sinkholes initiate and develop is of prime importance in development planning to reduce the damage caused by sinkholes, as well as the loss of life.

A literature review has been conducted of a wide range of scientific studies and technical documents related to this topic, to establish both current and past research

approaches to this problem. It is hoped that the application of the methodology to a specific case study in the South African context will provide useful insights into understanding the mechanism of sinkhole formation, and enable designs for effective sinkhole risk mitigation to be made on a more rational basis.

### Dolomite Stability Investigation in Bapsfontein

The town of Bapsfontein, situated approximately 30 km southeast of Pretoria in the Gauteng Province has in recent years experienced a number of sinkholes. Considering that this town is at the intersection of two major regional roads, the R51 and R50, and that there is also a large informal settlement in the town, the continued formation of sinkholes is a cause for concern.

An approximately 900 ha study area was identified for a dolomite stability investigation which will include a gravity survey on a 90 m grid and a rotary percussion drilling programme. A preliminary risk zonation has been produced and this will be tested and verified by the gravity survey and percussion drilling that will target gravity anomalies.

### Seismic Monitoring of Mining-induced Earthquakes

Although the South African National Seismograph Network spans the entire country, it is too sparsely distributed to locate some of the smaller and sometimes more important earthquakes and to encourage

research into the particular mechanisms of South African earthquakes. There is also not enough monitoring within the gold-mining and abandoned mine areas to assist in understanding, and thus mitigating the processes occurring in these areas.

The Council for Geoscience is involved in two projects which have allowed the installation of 12 seismograph stations within the Johannesburg area under the DMR-sponsored Strategic Water Management Project, and the preparation of the installation of another 10 stations in the Carletonville area, the latter in collaboration with the Japanese government.

The following factors have inspired the Council for Geoscience to propose and initiate projects such as these, which aim to increase earthquake monitoring in the gold-mining areas of South Africa, with the hope of promoting research into minimising the risk of seismicity, rockbursts and rockfalls, and their impact on the lives of miners and on the flooding of abandoned mines in these areas:

- More than 80 per cent of South Africa's seismic activity is related to the gold-mining activities in the country. The removal of ground at such depths during mining operations puts a large amount of stress on the surrounding rock mass, causing it to adjust itself in order to accommodate the new stress field.
- The Council for Geoscience has started to notice an increase in the seismic activity of the Johannesburg area over the past year and



it believes that this is a cause for concern. The organisation believes that the increase in seismicity is induced by the flooding of abandoned mines in the Johannesburg area. The flow of water creates a change in the underground stresses and lubricates the faults, which causes movement of the ground.

- Chapter 1 of the Presidential Mine Health and Safety Audit 2008 states: 'There is an urgent need to develop a national mine seismic network that will be fully integrated with the Council for Geoscience's seismic network'.

## Sustainable Development

### Carbon Capture and Storage

The contract to undertake the assessment of the CO<sub>2</sub> storage potential of South Africa in all onshore and offshore basins, signed towards the end of 2008, is progressing as scheduled. The work commissioned by Eskom, Sasol, PetroSA, Anglo American and SANERI is about 88 per cent complete and should be finalised by mid-2010. The project team is busy finalising the text and preparing the manuscripts for publication. The CO<sub>2</sub> storage report will be published in two forms: (1) a glossy document intended for a broad public readership, and (2) a technical report for a scientific/technical readership. Knowledge of the geological storage capacity of CO<sub>2</sub> is of vital importance in formulating future energy policies; with such capacity South Africa will be able to employ clean fossil fuel emission practices. Without storage capacity the country could face some difficult decisions regarding future trade-security challenges or the need to collaborate with its neighbours with respect to mitigation strategies.

### Coal Resources and Reserves

Pilot coal resource studies were undertaken on the peripheral coalfields of the Waterberg, Somkhele, Kangwane, Sasolburg-Vereeniging, the Free State and the Springbok Flats. A draft report of the gross in situ resources of these coalfields is available from the Council for Geoscience. Included in the report is information on both the quality and tonnage of coal, with accompanying maps and plans. The resource figures given did not, however, exclude mined-out areas and the information could not be categorised according

to the SAMREC code for the mineral resources and reserves of South Africa. The information generated will, however, need to be integrated with data from mining companies who are active in the areas in order to be able to present a clear picture of the coal resources of South Africa.

After 127 years of continuous coal mining in the country the remaining resources of the commodity are declining rapidly. The fact that no reliable coal resource figures are available for South Africa aggravates the situation. Therefore, as South Africa's coal resources are depleting, previously less attractive resources will have to be re-assessed and considered for exploitation. There is no doubt that the coal-mining industry still plays a vital role in the domestic economy, and particularly in power generation, synthetic fuel production and in terms of foreign revenue generated from export contracts.

The unexploited Springbok Flats coalfield hosts an estimated 4 billion tonnes of coal, as well as 77 072 tonnes of uranium resources associated with the coal zone. Unless the critical technology becomes available for the economically viable separation of the two commodities, these significant resources will remain inaccessible for exploitation.

The Moretele municipal area, which straddles unexploited coal resources of the southwestern portion of the Springbok Flats coalfield, has been selected for a pilot study. In the area of interest a total of 124 boreholes were drilled. Most of the boreholes intersected bright coal seams alternating with carbonaceous mudstone, which is characteristic of what is defined as the Coal Zone. Owing to the lateral variability of the coal seams both in terms of thickness and composition, it is virtually impossible to correlate them from one borehole to another without undertaking significant additional drilling, which is costly. However, on average, the accumulated coal seams comprise about 35 per cent of the Coal Zone.

Contour plans of the study area depicting the coal zone depth, coal zone thickness and open-pit versus underground coal have been compiled. Most of the coal, however, will be too deep for opencast mining methods to be applied. In addition, because of the friable nature of the hanging wall of the Coal Zone, caving problems are expected, posing a serious threat during underground mining. It was not possible to



compile contour maps for coal parameters such as raw ash, volatile matter and fixed-carbon contents, as well as yields, owing to correlation difficulties between the boreholes.

### Detection of Shallow Undermining by Electrical Resistivity Tomography

A prime component of the action plan of the Department of Mineral Resources includes the implementation of a Sustainable Development through Mining programme, which aims to identify and prioritise abandoned mines for rehabilitation. Therefore, the activities associated with securing abandoned shafts and other facilities posing hazards receive priority within the Council for Geoscience.

The shallow old mine workings along Main Reef Road in Johannesburg pose a serious hazard to the growing squatter settlements in the area. Recently, loss of life and property through subsidence of the ground has been documented, particularly in the Primrose area. In the interest of ensuring public safety, the Council for Geoscience has decided to investigate the spatial and depth distribution of the old mine workings to the south of Main Reef Road. A multi-electrode resistivity survey was proposed at Maraisburg and Primrose along Main Reef Road, where there are known vertical and south-dipping shafts. The review and analysis of available literature, as well as preliminary field investigations, have been completed. Further field work, including areas in Limpopo, is scheduled for the next financial year.

### Landslide Inventory and Susceptibility Mapping

The discovery of widespread, large palaeolandslide deposits in the KwaZulu-Natal and Eastern Cape border area is interesting as the extent of most of the recent landslide occurrences in this region was small. In the northeastern part of the Eastern Cape Province, some of these large geomorphic features appear to have temporarily blocked major rivers, such as the Mzimvubu River.

The pressure of urban development in South Africa has resulted in the expansion of housing areas and infrastructure onto hillslopes surrounding towns where there is an increased risk of slope failure. The Landslide Inventory and Susceptibility Mapping project produced a landslide susceptibility map covering the northern part of the Eastern Cape Province. This map will become a useful town-planning tool for future decision-making in regional and urban development projects. The adopted methodology is based on international best practice and can also be applied to other parts of the African continent.

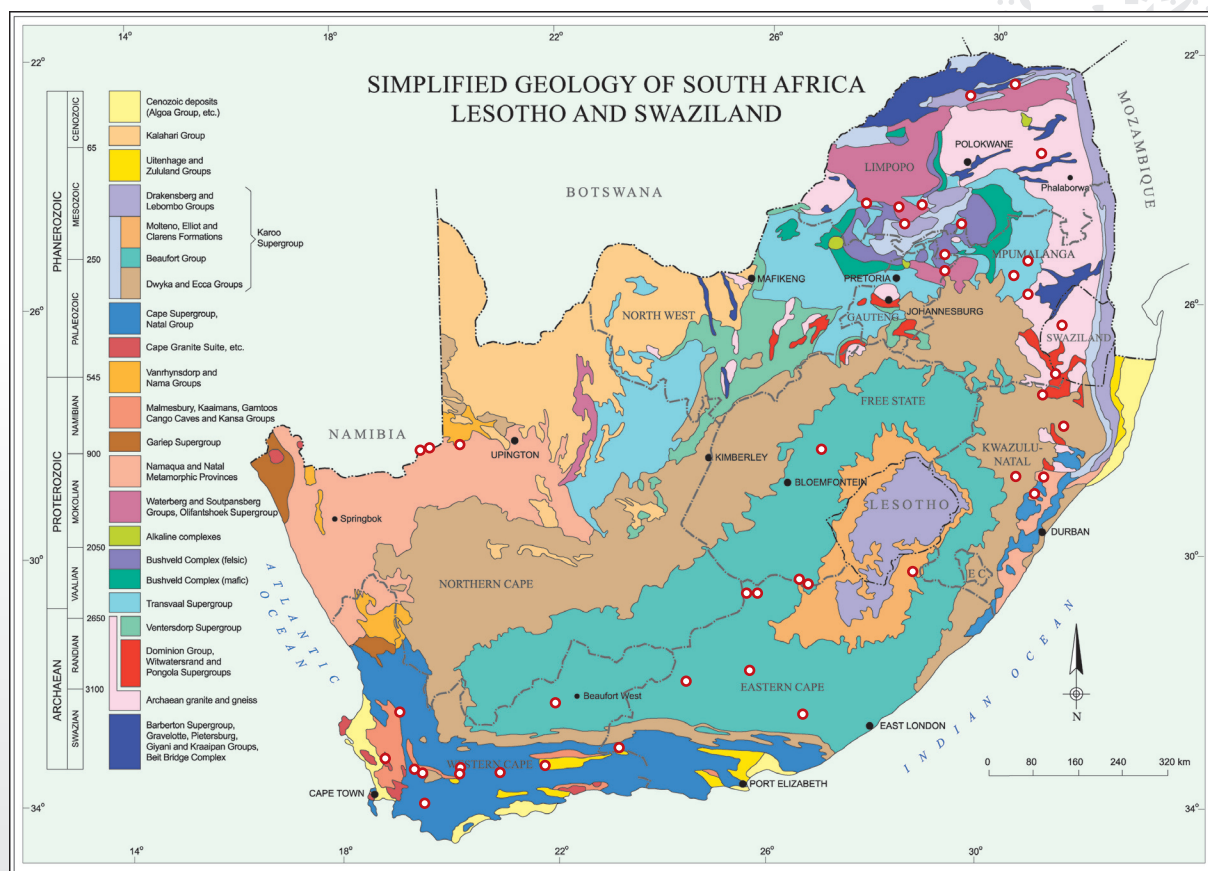
### Hot Springs in South Africa

South Africa has a number of thermal spring resources, which could provide localised sources of energy, while the deeper seated thermal sources for these springs could also be exploited. These resources need to be studied to determine their potential in terms of power generation and/or other alternative uses. Many of these thermal springs are located in poverty-stricken

Resistivity survey set-up: (left) field team and contract workers; (right) dense vegetation and lack of access roads slow the progress.







Simplified geology of South Africa with the thermal spring locations indicated as red dots.

rural areas. The identification of the optimal use of thermal springs, and subsequent development could play a significant role in the social and economic uplift of these communities. The project is aimed at studying the thermal springs of South Africa in terms of safety for use by humans (medical risk assessment), as part of the medical geology initiative. However, the scope was extended to specifically include the potential of these springs for alternative uses. These will include geothermal energy (power generation and direct heating), as well as agriculture (irrigation and aquaculture).

### Artisanal and Small-Scale Mining Environmental Impact: Towards Sustainable Development

South Africa has the constitutional obligation of meeting the needs of its citizens which include access to clean drinking water and adequate housing. Added to this, is the fact that the outcome of the growing economy has been the migration of people

to urban centres. This continuous influx of economic migrants results in an ever-increasing urban population which places a heavy burden on the ageing bulk infrastructure and raises a need for additional housing, amongst others.

To meet these basic needs, there should be an upgrade of the existing infrastructure through the building of more roads, bridges, residential buildings, office complexes, etc.

River sand and clay are the backbone in the refurbishment of old and building of new infrastructure by the construction industry. Additionally, South Africa is an arid country and river systems are the major source of potable water. Therefore, it is evident that the lack of a formal-integrated technically informed and holistic framework to regulate river-sand mining will, in the long term, expose South Africa to the possible collapse of river systems by causing irreversible collapse of river banks and increased silting of the rivers.

The objectives of this project are to:

- explore omissions within current legislation and policies regulating river systems in relation to surface water use, river-sand mining and environmental conservation. The legislative policies cited are as follows: the South African Constitution, the National Water Act, the Mineral Resources Development Act and the National Environmental Development Act
- explore the challenges, experiences and regulatory tools used in other countries through case studies on small-scale and artisanal mining
- explore future scenarios, making use of technically informed holistic approaches towards sustainability and conservation.

### Remote Sensing and Spatial Modelling

The remote sensing research laboratory at the Bellville regional office is engaged in new research and development, with three major innovative projects:

- The development of radar interferometry in South Africa for the first time. The technology allows the measurement of small-scale surface deformations and, consequently, has significant implications in the field of geohazard assessments. The technology is currently being applied in the monitoring of surface subsidence related to mining activities, as well as in earthquake hazard assessments.
- Hyperspectral remote sensing (256 bands) for mineral exploration. The first project is taking place in Namaqualand. It is a collaborative project between South Africa and Namibia, investigating detailed geological features south of the Orange River. New lithological features have been mapped with this technique.
- Bayesian network modelling, an artificial intelligence technique, is being applied to spatial data for assessment under uncertainty and for time-series prediction. The technique is currently being applied to catchment sustainability and groundwater analysis. This technique enables the integration of multivariable qualitative and quantitative data at different spatial and temporal scales. Acceptable results can be obtained with missing or incomplete data sets, and the technique provides an evaluation of uncertainty which prevents overconfidence in results.

## Target Generation

### Airborne Geophysics

The collection of high-density airborne geophysical data over regions in South Africa is vital for the promotion of the mining industry, especially for small-scale operators who cannot afford exploration on the scale that is done by the large mining houses. The ground-truthing and follow-up of airborne data are also vital for the understanding of the mineral resources of South Africa.

Airborne flying of geophysical data focused on the northern and eastern sections of the Bushveld Complex – where previously there was a lack of high-resolution data in the public domain. These data are currently being interpreted.

Analysis of airborne geophysical data and target generation focused on the west-central part of the North West Province, where geophysical data are of particular importance since large areas are covered by Kalahari sands. Several remnants of greenstone belts and minor layered mafic intrusions that occur parallel to longitude 25 degrees east, from the Botswana border in the north to near Vryburg in the south, were only recognised recently, having been previously unknown.

### Relationship between Lineament Density and Borehole Yield in the North West Province: Results from Geophysical Studies

Geophysical investigations have been carried out around Mafikeng in the North West Province. The aim of the study was to assess the groundwater potential, using an integrated exploration approach that involves geophysical and hydrogeological studies. Airborne magnetic data were used in conjunction with frequency and time-domain electromagnetic methods.

Six potential groundwater targets were identified, based on the interpretation of the integrated geophysical data sets. The identified targets coincide with fractured crystalline basement and carbonate rocks that include limestone and dolomite. The time-domain electromagnetic sounding conducted at selected target areas indicates the presence of an

electrically conductive top layer attributable to an increase in clay content. This layer is underlain by a 15 to 35 m thick moderately conductive layer, which can be interpreted as a possible fresh-water aquifer. In general, the results of modelling the time-domain electromagnetic sounding suggest that a potential groundwater aquifer in the area lies at a depth ranging from 20 to 35 m.

### Geochemical Sampling in the Country

Airborne geochemical sampling of the eastern escarpment and lowveld was completed early in the period under review. The 1:50 000-scale sheets covered include the areas of Penge, Ofcolaco, Acornhoek, Bushbuckridge, Sabie, Hazyview and White River. Sampling covered an area of more than 5 000 square kilometres. At a sampling density of one sample per square kilometre and a mass of 5 kg per sample, close to 25 tonnes of samples have been collected and transported to Pretoria, where the analytical laboratory of the Council for Geoscience completed analysing the bulk of these, using X-ray fluorescence.

Arrangements for follow-up sampling of the most promising geochemical anomalies that were indentified in the previous reporting year also commenced. Follow-up samples were taken to confirm the presence of new anomalies and to investigate signs of possible mineralisation. The four anomalies that have been targeted for the follow-up work involved three new gold anomalies and a new uranium anomaly. One of the gold anomalies is also associated with prominent arsenic mineralisation.

## Recapitalisation

### New Rotary Drilling Rig

The Council for Geoscience purchased a state-of-the-art drilling rig and associated supply rig. This new generation rotary drilling rig has the ability to do multi-drilling up to 400–500 m in depth and has been completely reworked and upgraded, technically as well as powerwise. The drilling machine is capable of using a variety of drilling methods, including rotary drilling with direct circulation, auger drilling, percussion core drilling (ram coring), wire-line core drilling, down-the-hole hammer drilling and free-fall drilling.

The rig will mostly be used for projects related to small-scale mining as part of scientific research programmes and for ongoing groundwater resource assessments.

### ISO Accreditation for the Laboratory

Implementation of ISO 17025 for the analytical laboratory of the Council for Geoscience commenced during the second quarter of the year. All staff members attended several meetings, including discussions and acceptance of the implementation plan. Staff members are generally positive about this development and it is felt that with this accreditation improved levels of professionalism and recognition will be achieved.

## Education and Information

### Geological Mapping Field School

The year witnessed the further consolidation of the Field School as a year-long programme, during which the full-time participants are guided and mentored continuously. The programme is structured into four modules lasting three months each, and covering various primary topics, with secondary themes. This year these themes focused on structural and metamorphic aspects, with some basement geology. The degree of supervision was systematically reduced and the responsibilities of the trainees concomitantly increased, with the aim of guiding them towards independence in terms of the requisite skills for undertaking field-mapping projects. The completion of relevant short courses forms an integral part

The new drilling rig is applied for many of the Council for Geoscience's research programmes.







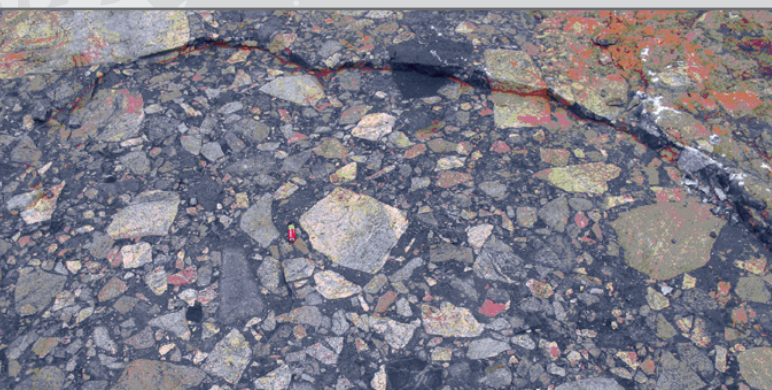
Young geologists at the type locality for the Goudplaats-Hout River gneiss west of Modjadiskloof, Limpopo Province.

of the programme. The Field School also collaborates with the Mining Qualifications Authority (MQA). Four trainees completed the programme and, at the end of the year, they were assigned to different regional mapping units within the organisation. The implementation of the Field School into this format represents a significant commitment of resources towards focused training in these scarce skills, with the possibility of continued expansion should the funds be secured.

### Magmatic Cycles and Chronostratigraphy of South Africa

Fossils were once thought to be present only in relatively young rocks that formed within the last 500

Breccia at the base of the Platberg Group. The breccia was eroded from a fault scarp, associated with tectonism after the eruption of the lava of the Klipriviersberg Group.



million years. However, it is now known that fossils have been present in rocks that are as old as 3 480 million years. New types of fossil were formed by new forms of life that appeared after major geological events. These major events are associated with the eruption of lava, uplift of the land and changes in the composition of the atmosphere.

Some extremely old (Archaean) events that are preserved in the South African rock record are:

- 3 480 million years ago lava of the Komati Formation erupted, and, after this, the first microbes that use sunlight as a source of energy appeared
- 3 080 million years ago lava of the Dominion Group erupted at the beginning of the Randian Era; during this era microbes colonised the land and precipitated gold that is now mined from the Central Rand Group
- 2 710 million years ago lava of the Klipriviersberg Group erupted; subsequent uplift of the land produced major faults; rocks eroding from these faults were preserved in the Platberg Group; in the lakes of the Platberg Group cyanobacteria appeared and produced stromatolites which contained evidence of oxygen bubbles.

The appearance of free oxygen on earth is the most dramatic event in the evolution of the atmosphere and of life. After 2 710 million years ago, the oxygen

content of the atmosphere began to increase and at 2 050 million years ago primitive forms of oxygen-consuming microbes appeared. These are the ultimate ancestors of all living animals. All these major events are preserved in the South African rock record, which, therefore, provides globally unequalled opportunities to display past evidence of global change and evolution to the youth of South Africa and to the wider public.

#### Development of a Database and a National Strategy for the Management and Rehabilitation of Derelict and Ownerless Mines

As part of the Sustainable Development through Mining programme, the Council for Geoscience developed a national database of derelict and ownerless mines, a ranking system for identifying the priorities for rehabilitation and a national strategy for the management and rehabilitation of these mines on behalf of the Department of Mineral Resources. The project aimed to provide a strategic framework to address possible government liabilities with respect to abandoned mines. This required a first-order quantification of the situation and a strategy to address problem sites. This project was required as no detailed database of derelict and ownerless mines was available in the past. There was also no system for the determination of rehabilitation priorities based on risk to human health and safety, and the environment.

Currently this database contains approximately 6 000 records. A screening-level risk-assessment procedure focusing on human health and safety, as well as the environment has been developed and applied to 100 sites as a pilot implementation. A national strategy outlining priorities for rehabilitation has been proposed and approved by the Minister of the Department of Mineral Resources.

#### Development of Regional Mine Closure Strategies

The extent of cumulative mining-related impact has led the Department of Mineral Resources to take a pro-active approach to the sustainable closure of mines. Since different mines in a specific area will cease their operations at different times, an overarching framework needs to be developed for each mining region within which individual mines will be able to plan for mine closure. The Department of

Mineral Resources initiated the process of developing regional mine closure strategies for various commodities. The first of these, The Strategy for Regional Mine Closure for the Witwatersrand Basin, is an overarching document that is supported by five goldfield specific regional mine closure strategies for the five goldfields in the Witwatersrand basin, which include the Central Rand; East Rand; Klerksdorp, Orkney, Stilfontein and Hartebeesfontein (KOSH); West Rand and Far West Rand.

The input of the Council for Geoscience towards Regional Mine Closure was presented at the International Mine Closure Conference in Johannesburg.

#### Strategic Water Management in the Far West Rand

The Council for Geoscience is involved in studies on the Far West Rand, which include surface-water sampling and environmental risk assessments.

The primary objectives of the project are:

- to prevent ingress of surface and groundwater into the underground workings
- to manage decant of mine-polluted water
- to predict and prevent harm to the environment
- to apportion pollution sources and liabilities
- to develop water-management strategies.

Surface-water monitoring for the dry season has been completed in September 2009 and an accompanying report was compiled. The sampling for the end of the wet season has been completed in March 2010. The samples were submitted for analyses to the wet chemistry laboratory of the Council for Geoscience.

Geological cross-sections and a 3D geological model was completed for the Far West Rand, which will assist in determining the environmentally critical level and a rewatering strategy.

#### Development of a Groundwater Monitoring Framework for the Cradle of Humankind World Heritage Site

Over a period of several years, a number of threats have been identified to the quality and supply of groundwater to the Cradle of Humankind World Heritage Site. These include the impact of acid mine



drainage, poorly managed sewage, agriculture and the overabstraction of groundwater. The project, which is funded by BlueIQ and undertaken in collaboration with the CSIR and the University of the Witwatersrand, aims to develop a management framework for groundwater within the area by determining the current status and assessing the various threats.

Sampling activities have been undertaken to collect pristine dolomite samples to represent uncontaminated aquifer material. These have been investigated petrologically. A laboratory simulation is underway to investigate the impact of acid mine drainage on dolomite.

Sediment sampling has been completed and laboratory tests are being undertaken to determine the total metal content within the sediments, as well as the mobile and bio-available fractions.

A number of geophysical profiles have been measured, to better constrain the location of structural features in the area.

This project will, for the first time, provide definitive results on the interaction between acid mine drainage and dolomite in areas downstream and down-gradient of contamination sources. It will also assist in determining the status of the environment in the Cradle of Humankind, particularly with respect to groundwater.





# Publications

1:50 000 Geological Map 2926AB Maselspoort

The following publications were released during the year:

Explanation: Sheet 3017 Garies (1:250 000). The geology of the Garies area by C.H. de Beer

Explanation: Sheet 2926BA (1:50 000). The geology of the Sannaspos area by I.G. Haddon, P.J.A. Bosch and D. van Niekerk

South African Committee for Stratigraphy (SACS). Lithostratigraphic Series No. 51. Lithostratigraphy of the T'hammaberg Formation (Bushmanland Group) by M.R. Johnson

Annual Report of the Council for Geoscience 2008/09  
Catalogue of Publications of South African Geological Surveys and Government Publications on the Earth Sciences by R.R.M. Price

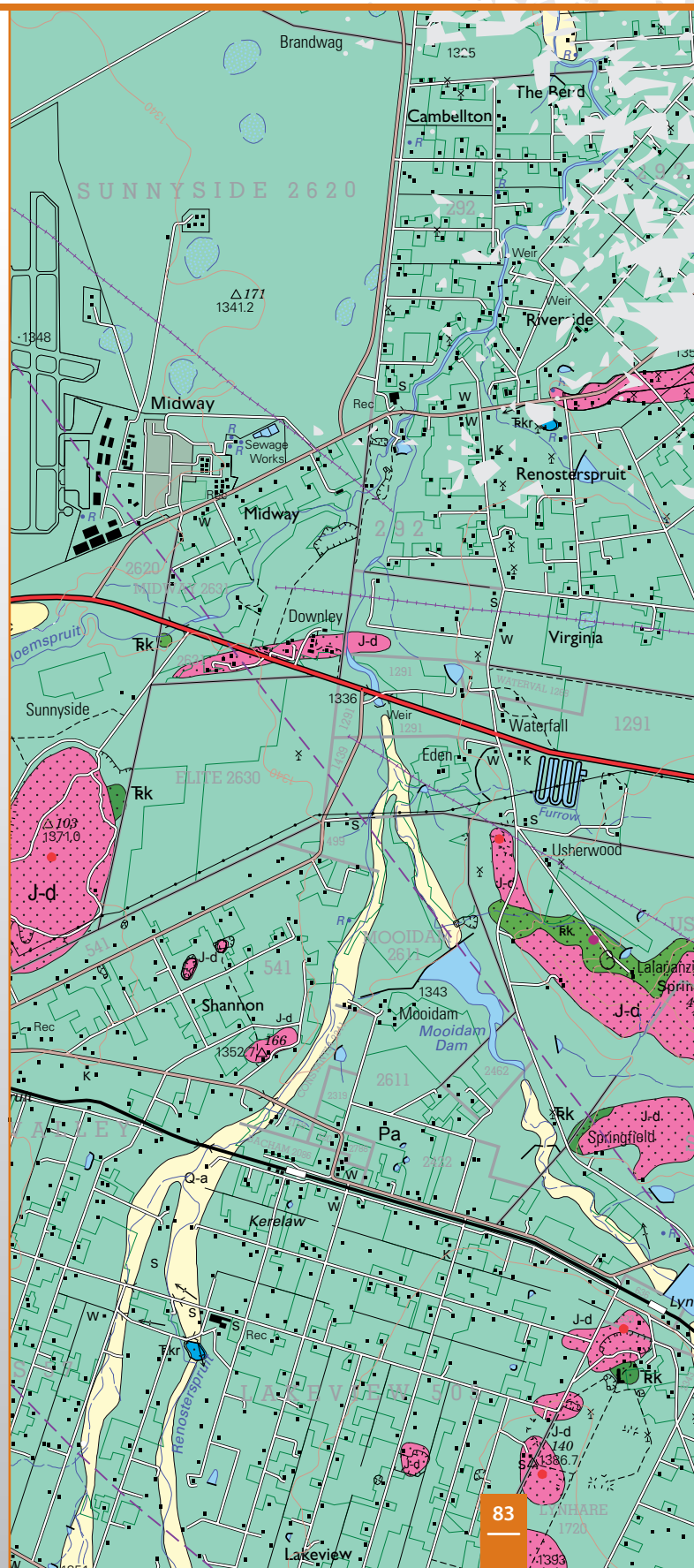
The following maps were released during the year:

1:250 000 Geological Maps

2816 Alexander Bay  
3017 Garies

1:50 000 Geological Maps

2429AC Zebediela West  
2429AD Zebediela East  
2429AB Tshwene  
2527DD Broederstroom  
2926AB Maselspoort  
2926BA Sannaspos  
2926BB Thaba Nchu  
3217DB & DD Vredenburg  
3218CA & CC Velddrif



## 1:50 000 Geotechnical Maps

2930DD & 2931CC Durban

## 1:250 000 Gravity Maps

2326 Lephalale  
2522 Bray  
2524 Mafikeng  
2526 Rustenburg  
2622 Morokweng  
2624 Vryburg  
2626 Wes-Rand  
2720 Noenieput  
2722 Kuruman  
2724 Christiana  
2726 Kroonstad  
2818 Onseepkans  
2820 Upington  
2822 Postmasburg  
2824 Kimberley  
2918 Pofadder  
2920 Kenhardt  
2922 Prieska  
2924 Koffiefontein  
3018 Loeriesfontein  
3020 Sakrivier  
3022 Britstown  
3024 Colesberg  
3118 Calvinia  
3120 Williston  
3122 Victoria West  
3124 Middelburg  
3220 Sutherland  
3222 Beaufort West  
3224 Graaff-Reinet  
3320 Ladismith.

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# Social Responsibility

OF THE COUNCIL FOR GEOSCIENCE

## Visits to the Council for Geoscience

The Council for Geoscience hosted a delegation from the following country:

- Japan, AIST – 16 September 2009.

Learners from the following institutions visited the Council for Geoscience:

- Sapphire Secondary School – 15 May 2009
- Hoedspruit Independent College – 26 May 2009
- Vezubuhle Secondary School – 6 August 2009
- Somsuswa FET School – 9 October 2009
- Vezubuhle Secondary School – 12 March 2010
- Tshwane University of Technology – 25 March 2010.

## Exhibitions by the Council for Geoscience

The Council for Geoscience was represented at numerous exhibitions and mining, geoscientific and educational events, including the following:

- DMR Learners Focus Week, Project on Energy and Mining, Eastern Cape Province, 7 May–2 July 2009
- Museum Day, Tshwane, 18 May 2009
- Hoffmeyer High School, Atteridgeville, 25 July 2009
- MAP Africa Conference, Johannesburg, 16–18 September 2009
- DMR Learners Focus Week, Eastern Cape Province, 27 September–1 October 2009.

Learners from the Vezubuhle Secondary School admiring the displays of the Geoscience Museum.



## Community Involvement

The Council for Geoscience was involved in the Mandela Day initiative that took place on 17 July 2009 and donated winter clothing and stationery to boys of the Itumeleng Shelter, based in Pretoria. The boys visited the Geoscience Museum, where they were granted the opportunity to learn about fossils and minerals. On Saturday, 18 July 2009, a trip to the Pretoria Zoo was organised for the Itumeleng boys.

The Council for Geoscience donated laptops to two learners who attended the Learners Focus Week project on Energy and Mining in the Eastern Cape Province.

## Activities of the Young Science Forum

The Young Science Forum (YSF) of the Council for Geoscience visited the Sterkfontein Caves and Maropeng Visitor Centre – situated in the Cradle of Humankind and a world heritage site – on 17 July 2009 as part of its educational activities. The visitor centre presents interactive exhibitions that focus on the development of human ancestry. The guided tour gave YSF members a better understanding of the history and development of humankind.

A senior scientist of the organisation guided 23 YSF members on a 7 km hiking trail along the Tswaing Crater, which is located about 40 km north of Pretoria and is one of the best preserved terrestrial meteorite impact structures in the world. The YSF members



Boys of the Itumeleng Shelter at the Geoscience Museum.



Two learners with the Deputy Director-General, Ms Zungu, at the Learners Focus Week. These learners were awarded laptops by the Council for Geoscience.

Members of the Young Science Forum in front of the Sterkfontein Caves.



discussed the geological, historical and environmental features of the crater and how science proved that it was formed by a meteorite impact 200 000 years ago.

Two talks were held during the year, one on mercury contamination in fish of South Africa and the other on the occurrences and applications of rare-earth elements.



## Bursars of the Council for Geoscience

The Council for Geoscience has a group of 29 bursars, studying at various institutions in the field of the geosciences.

Surname	Initial	Gender	Year of study	Institution
Dube	MG	Female	2nd year	NWU
Hlongoane	GJ	Male	2nd year	WITS
Mpane	TM	Female	2nd year	WITS
Ntikang	TJ	Male	2nd year	UWC
Botsi	D	Male	3rd year	UP
Buthelezi	MC	Female	3rd year	UKZN
Fisha	LG	Male	3rd year	VUT
Govender	N	Male	3rd year	UKZN
Halenyane	K	Female	3rd year	UCT
Lutsinge	TB	Female	3rd year	UP
Mashale	H	Female	3rd year	UP
Matlokotsi	MB	Male	3rd year	UFS
Mhlongo	PM	Male	3rd year	UKZN
Mphahlele	C	Female	3rd year	WITS
Mulabisana	TF	Female	3rd year	WITS
Mutele	LP	Male	3rd year	RU
Selepe	M	Male	3rd year	UP
Sithole	ST	Male	3rd year	US
Xanga	S	Male	3rd year	UFH
Zama	N	Female	3rd year	UKZN
Mokoena	NT	Female	BTech	TUT
Thenjekwayo	TV	Male	BTech	TUT
Baker	A	Female	Honours	US
Gogotya	BB	Female	Honours	UFH
Lala	A	Male	Honours	WITS
Mkhize	NE	Female	Honours	UKZN
Selepe	FP	Male	Honours	UP
Sogayiso	SL	Male	Honours	UFH
Rikhatso	C	Male	National Diploma	TUT

WITS – University of the Witwatersrand  
 NWU – North-West University  
 UWC – University of the Western Cape  
 UP – University of Pretoria  
 UFS – University of the Free State  
 UKZN – University of KwaZulu-Natal

UFH – University of Fort Hare  
 US – University of Stellenbosch  
 RU – Rhodes University  
 UCT – University of Cape Town  
 TUT – Tshwane University of Technology  
 VUT – Vaal University of Technology



# Future Outlook

OF THE COUNCIL FOR GEOSCIENCE

The need to meet budgetary demands through commercial work has placed an exceedingly large amount of pressure on the Council for Geoscience during the 2009/10 financial year. The need to fund the organisation's local, statutory activities through the commercial revenue stream arised because there was no core funding available for the operational requirements over and above personnel costs. This has led to the situation where the public good services and mandate of the Council for Geoscience in support of national imperatives can only be carried out where the organisation achieves a commercial surplus – a situation which becomes extremely risky when there is a downturn in the economy.

The commercial revenue of the Council for Geoscience is mostly generated by agency work conducted for government departments, mainly the Department of Mineral Resources, from national projects such as for Eskom and from internationally funded projects of the European Union, World Bank and foreign governments. The commercial surplus thus generated is used to fund the following operations in the CGS:

- Completion of the Annual Technical Programme – a statutory mandate, which involves the mapping of South Africa
- Capitalisation of its infrastructure
- Investment into human capital, especially skills development and transformation of the Council for Geoscience.

The above operational model has been successful in the past and, along with managerial competencies, has resulted in an increasing level of performance of the organisation in terms of the Annual Technical Programme, commercial revenue and commercial surplus. However, the total reliance of the completion of the technical programme, human

capital investment programmes, the recapitalisation of scientific equipment and the covering of all the overhead costs of the Council for Geoscience on the commercial surplus has placed an unsustainable burden on the organisation. Like all institutions worldwide, the Council for Geoscience was hit adversely by the general economic downturn and the worldwide recession, which is forcing mining companies to cut down on their exploration and mining activities. As is usual, exploration companies are the worst hit, since the outlook for future mining operations is bleak for the immediate future and exploration for new mineral targets is declining. As a consequence, the World Bank and European Union are also cutting back on their funding of projects in Africa, which are essentially grass-root projects involving geological mapping, geophysical surveys and geochemical sampling. Since a large part of the organisation's commercial income is derived from such projects, it is anticipated that this situation will affect the income from these sources unfavourably for the next few years.

The significant drop in commercial earnings for the period 2009/10 has shown that the Council for Geoscience has had to suspend a very large number of its activities and is consequently contributing very little in terms of mandated core geoscientific work for the country. The following is a list of the key activities that have been terminated or suspended:

- Direct costs related to the Annual Technical Programme were suspended and this situation will continue in 2010/11 until the commercial income has improved the cash flow of the organisation.
- The Council for Geoscience will not be in a position to offer bursary holders full-time employment at this stage.

- The appointment of new staff has been suspended. This includes the replacement of staff who resign, retire or pass away.
- All statutory analyses in the laboratory have been suspended.
- The financial viability, rather than the scientific value of the different laboratory functions is being considered for future operations.
- All field work related to the regional geochemical mapping programme is suspended.
- The helicopter programme to collect soil samples for 2010/11 has been terminated.
- No maps will be printed. Maps will be prepared to a print-ready stage only.
- The transfer of geochemical soil samples to the Donkerhoek Core Library is suspended.
- No publications will be printed and released.
- All planned and new exhibitions and holiday programmes hosted by the Geoscience Museum are suspended.
- No donations of new core for the Core Library collection will be accepted. Only limited services in terms of core viewing are currently being provided.
- The budget for journal subscriptions in the Library was reduced by 72 per cent for 2010/11. This implies a significantly reduced number of scientific journals being available for geoscientific work.
- Maintenance of aircraft for the airborne geophysical operation is suspended. This effectively grounds the operation.
- The geophysical airborne survey programme for 2010/11 is suspended.
- The airborne EM development innovation project is suspended indefinitely.
- The attendance of most national and international conferences is suspended.

For the past five years, the Council for Geoscience has attempted to partially address its funding shortfall by annually proposing a series of projects as part of the Medium Term Expenditure Framework (MTEF) process. To date the organisation has only been awarded one project to identify potential mineral targets using airborne geophysics and geochemical sampling in Mpumalanga and Limpopo, to the value of R50 million. The project commenced in April 2007 and was funded over three years.

The way forward is viewed as a way of becoming more relevant to the needs of the people of South

Africa. Large geoscientific programmes which meet these criteria will continue to be proposed to Government through the MTEF process. These types of programmes can effectively subsidise the Council for Geoscience, bringing the organisation back on track in terms of its statutory obligations, and minimising the need to pursue commercial work.

The organisation is currently exploring various options in addressing a turn-around strategy. In the meantime the cost-cutting measures listed above will continue. In addition, a massive drive to acquire new projects for the organisation has been implemented. The drive involves the following:

- Discussions with several state organs and departments to explore collaboration and contract work. In this regard many positive indications are now visible. For example, the Council for Geoscience has already secured several, albeit small, projects with the Department of Science and Technology (DST). One such project will utilise the mapping expertise built up for over 100 years within the Council for Geoscience, to embark on a systematic offshore mapping programme. The Council for Geoscience has mapped the country in terms of its terrestrial territory and has collected geological, geophysical, metallogenic and geochemical information. These maps have underpinned the mineral exploration industry, as well as land use development issues facing the country. However, South Africa's knowledge of its sea bed, which represents an area of 1,5 million km<sup>2</sup> (South Africa's land area is 1,2 million km<sup>2</sup>) is almost unknown. The sea bed is known to contain many resources such as phosphate, manganese, gas hydrate, aggregates, carbonate for cement and even base metals. The sea bed also comprises many environments in which our fish stocks are sustained. In addition, it is the place where increasing interest is being shown for the production of renewable sources of energy. There is little doubt in stating that the very large area of sea bed belonging to the country represents the next frontier for exploration. In 2010/11 the Council for Geoscience will make use of seed funding from the DST to embark on such a programme of activities to initiate a systematic offshore mapping programme.
- The Council for Geoscience sees itself as a vital role player in the future energy needs of South

Africa. It is envisaged that the project of assisting Eskom in the process of performing geophysical, geological and seismological studies of possible sites for nuclear power stations will re-commence during 2010/11. Accurate and reliable geological information is vital to the safety of these areas, and the Council for Geoscience is well able to provide such information, as the leading geoscience agency in South Africa.

- The Council for Geoscience believes that it has an important role to play in addressing the historically created gap in the monitoring of mine seismicity between the underground mining networks and the South African National Seismograph Network, and has proposed to the Department of Mineral Resources the installation of a number of surface stations within the mining districts. Data from these stations, along with data obtained from the mining organisations, will assist the Council for Geoscience in building a comprehensive database of information on mining seismicity for the country. The database will be used for future research into the reduction of the number of fatalities and injuries to workers in South African mines.
- Discussions with the National Research Foundation (NRF) to fund some of the projects. In this regard, several proposals will be prepared and submitted to the NRF.
- Enhancing the strategic partnerships with geological institutions from developed countries such as Britain, France, Finland, Germany and Belgium.
- ISO accreditation of organisational functions. The Council for Geoscience will complete the process of developing and implementing ISO 9001 and ISO 17025 in the organisation.
- The Council for Geoscience has large spatial and non-spatial geoscientific databases which are continuously being updated. This information is invaluable, not only in mining and environmental activities, but also in engineering activities. A wealth of data exists within the Department of Mineral Resources which needs to be centralised and organised. The Council for Geoscience also has a large volume of exploration data and information in hard-copy format only. To convert these to electronic format for potential release via the internet will be a mammoth task, but the organisation will focus on this over the next couple of years.

An important and innovative development for the country has been the involvement of the Council for Geoscience in the compilation of a carbon-dioxide geological storage atlas. Carbon capture and storage is one of the recognised mitigation measures for the lowering of greenhouse gas emissions. Assessment of the potential for carbon capture and storage in South Africa requires a detailed investigation into locating and characterising potential carbon geological storage sites. The Council for Geoscience, along with the Petroleum Agency of South Africa, is tasked with the compilation of this atlas, which has been sponsored by Sasol, Eskom, PetroSA, Anglo American and the South African National Energy Research Institute. The Atlas is due for release during 2010/11.

The Council for Geoscience, in collaboration with the Geological Society of South Africa and the South African Committee of the International Union of Geological Sciences, with support from the Department of Mineral Resources, won the bid in Oslo to host the globally prestigious International Geological Congress (IGC) in 2016 in Cape Town. The IGC is the largest geological congress in the world and is held every four years. It is essentially the 'World Cup' of geological conferences. Its award to South Africa represents an important vote of confidence by the international geological community for South Africa and the continent as a whole. The Council for Geoscience will, over the next MTEF period, play an instrumental role in driving and supporting the process of preparing for this conference.

The process of amending the Geoscience Act is at an advanced stage. Cabinet has approved the release of the Bill for public comments and it is expected that the amended Act will come into existence within the next year. The amended Act will place new responsibilities on the Council for Geoscience, and the organisation has already started preparing for it and will continue with this process in the current year.

It is important to note that the main strength of the organisation lies in its human capital. The damage done to the Council for Geoscience through loss of this human capital for various reasons outside the organisation's control will be extremely difficult to repair. The shortage of funding to the organisation, which is, in turn, causing many scientific projects to be suspended, is, without doubt, putting considerable strain on this area of human investment. The challenge for





the Council for Geoscience and for Government will be to ensure that the human capital and the skills they represent are not lost. In order for the organisation to fulfil its basic mandate across its operational (scientific) and capitalisation programmes, while protecting its human capital, a significant revision of its core government grant is required. This will allow the Council for Geoscience to, once again, play a significant role in the development of South Africa, for the benefit of its citizens.



# Sustainability Report

OF THE COUNCIL FOR GEOSCIENCE

## Executive Remuneration

### Chief Executive

In terms of Section 18(5) of the Geoscience Act (Act No. 100 of 1993), the *'Executive Officer shall be appointed on such conditions, including conditions relating to payment of remuneration, allowances, subsidies and other benefits as the Management Board may determine in accordance with a system approved from time to time by the Minister with the concurrence of the Minister of State Expenditure'*.

### Executive Management Team

The remuneration of the Executive Management team is determined by the Management Board of the Council for Geoscience and is reviewed from time to time.

## Transformation

The Council for Geoscience adheres to equal opportunity and affirmative action principles as promulgated in the Employment Equity Act (Act No. 55 of 1998).

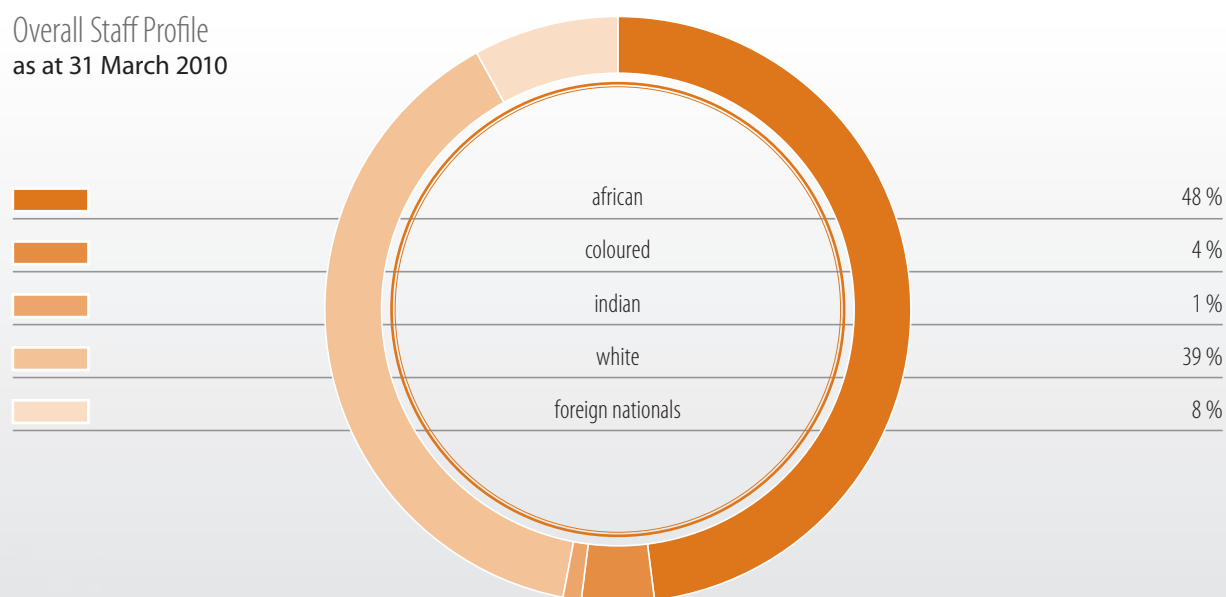
The Personnel, Remuneration and Transformation Committee of the Management Board is responsible for monitoring and evaluating progress on transformation and skills development.

The Council for Geoscience operates in a labour market characterised by a scarcity of geoscientific skills and a market that is highly competitive. Positive measures are in place to address attraction of potential scientific skills from designated groupings. A bursary scheme was put in place, and the programme is used as a feeder pipeline to attract potential and developing scientists from designated groups into the field of geoscience.

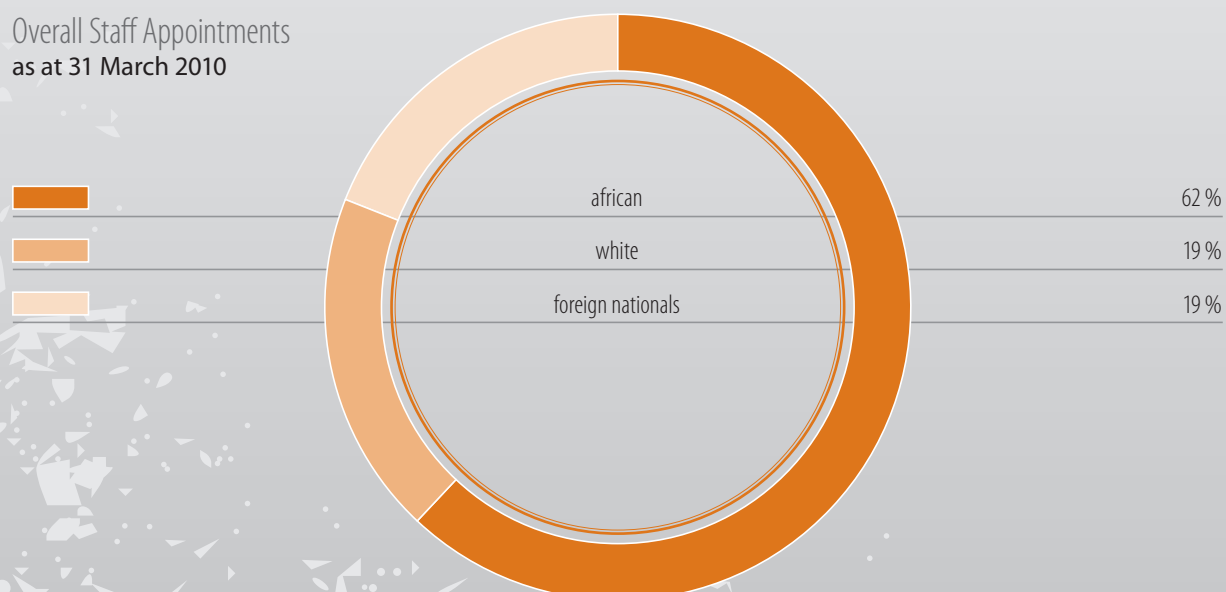


The graphs illustrate the demographic composition of the staff and bursars of the Council for Geoscience.

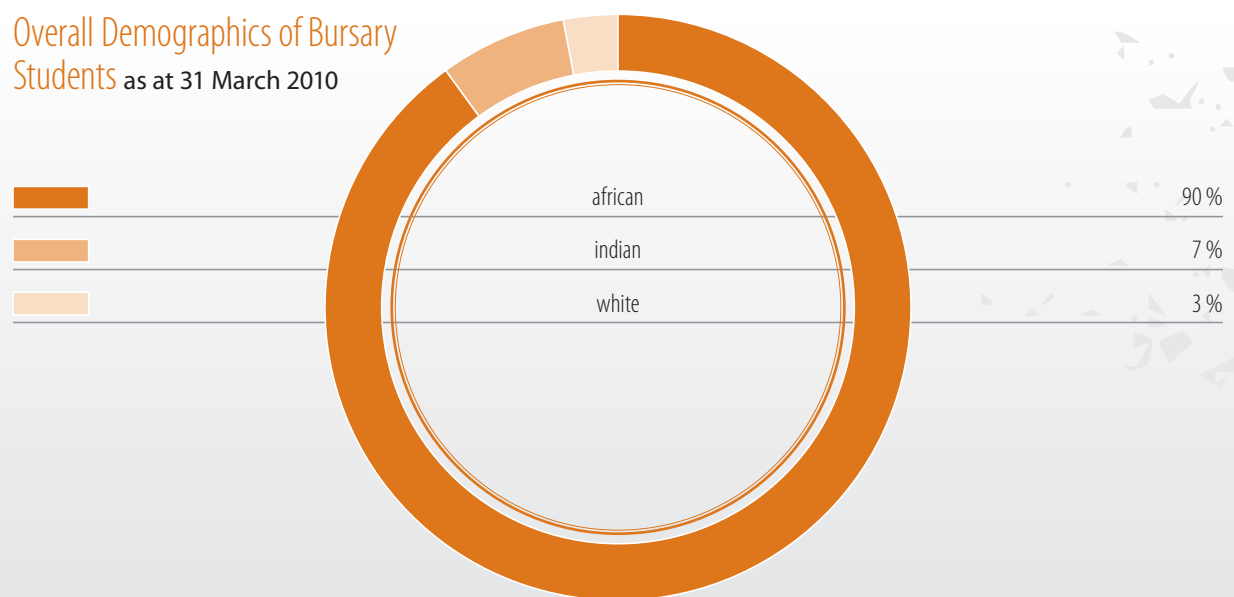
Overall Staff Profile  
as at 31 March 2010



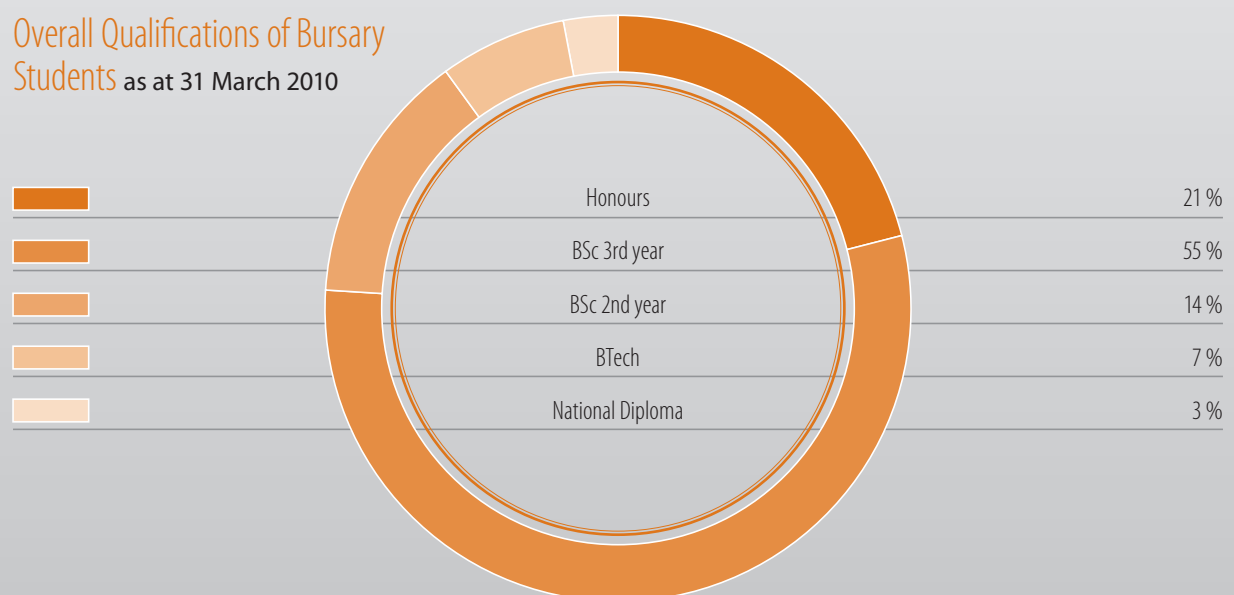
Overall Staff Appointments  
as at 31 March 2010



## Overall Demographics of Bursary Students as at 31 March 2010



## Overall Qualifications of Bursary Students as at 31 March 2010



## Ethical Management

### Adherence to the code of ethics

The Council for Geoscience has developed and adopted a Code of Ethics for the Board, Executive Management and staff. The code of ethics links to the values of the organisation and requires all employees to maintain the highest ethical standards.

## Health, Safety and Environmental Management

The Operational Risk Management Committee (ORMC), which functions at Executive level in the Council for Geoscience, takes responsibility for occupational health and safety issues in the organisation. The role of the ORMC is to identify and monitor significant risk elements that could have an effect on the operation of the Council for Geoscience.

The ORMC is supported through a Business Continuity Committee (BCC) since 2008. The mandate of the BCC is to ensure that all risks which may disrupt the operation of the organisation are highlighted and addressed on time. The Business Continuity Committee is mandated to:

- Ensure that the Council for Geoscience complies with the Occupational Health and Safety Act (Act No. 85 of 1993)
- Anticipate clearly and comprehensively all forms of crisis situations
- Develop strategies and procedures to cater for the risks
- Monitor the implementation and effectiveness of the counter measures instituted.



# Management

OF THE COUNCIL FOR GEOSCIENCE



## CHIEF EXECUTIVE OFFICER

Thibedi Ramontja



BOARD ADMINISTRATOR

Nangamso Mbeki



## EXECUTIVE MANAGER APPLIED GEOSCIENCE

Fhatuwani Ramagwede

Engineering Geoscience	– Stewart Foya (Acting)
Environmental Geoscience	– Tsholofelo Phajane
Minerals Development	– Stewart Foya
Water Geoscience	– Leslie Strachan

in the office of the CEO

## STRATEGIC SERVICES

Nico Keyser and Maleka Monyepao

- Annual Technical Programme Management
- Commercial Project Tender Management
- Strategy Planning Cycle
- Technology and Innovation Management



## EXECUTIVE MANAGER REGIONAL GEOSCIENCE AND MAPPING

Peter Zawada

Central Regions	– Abraham Thomas
Eastern Cape	– Greg Botha
KwaZulu-Natal	– Greg Botha
Limpopo	– Nick Baglow
Marine Geoscience	– Rochelle Wigley (Acting)
Northern Cape	– Luc Chevallier
Western Cape	– Luc Chevallier



## CHIEF FINANCIAL OFFICER CFO SERVICES

Leonard Matsepe

Finances and Procurement	– Leonard Matsepe (CFO)
Information and Communication Technology	– Peter Motaung
Technical Services and Logistics	– De Clerq Botha



## EXECUTIVE MANAGER SCIENTIFIC SERVICES

Gerhard Graham

Geophysics	– Patrick Cole
Information and Collections Management	– Danie Barnardo
Laboratory	– Thinus Cloete
Regional Geochemical Mapping	– Thinus Cloete
Seismology	– Michelle Grobbelaar
Spatial Data Management	– Ken Wilkinson



## SENIOR MANAGER CORPORATE SERVICES

Malefshane Kola

Human Resources	– Malefshane Kola
Marketing and Communications	– Nthombi Mdluli Jacha

