



INTEGRATED ANNUAL REPORT 2019



South African Nuclear Energy
Corporation SOC Limited

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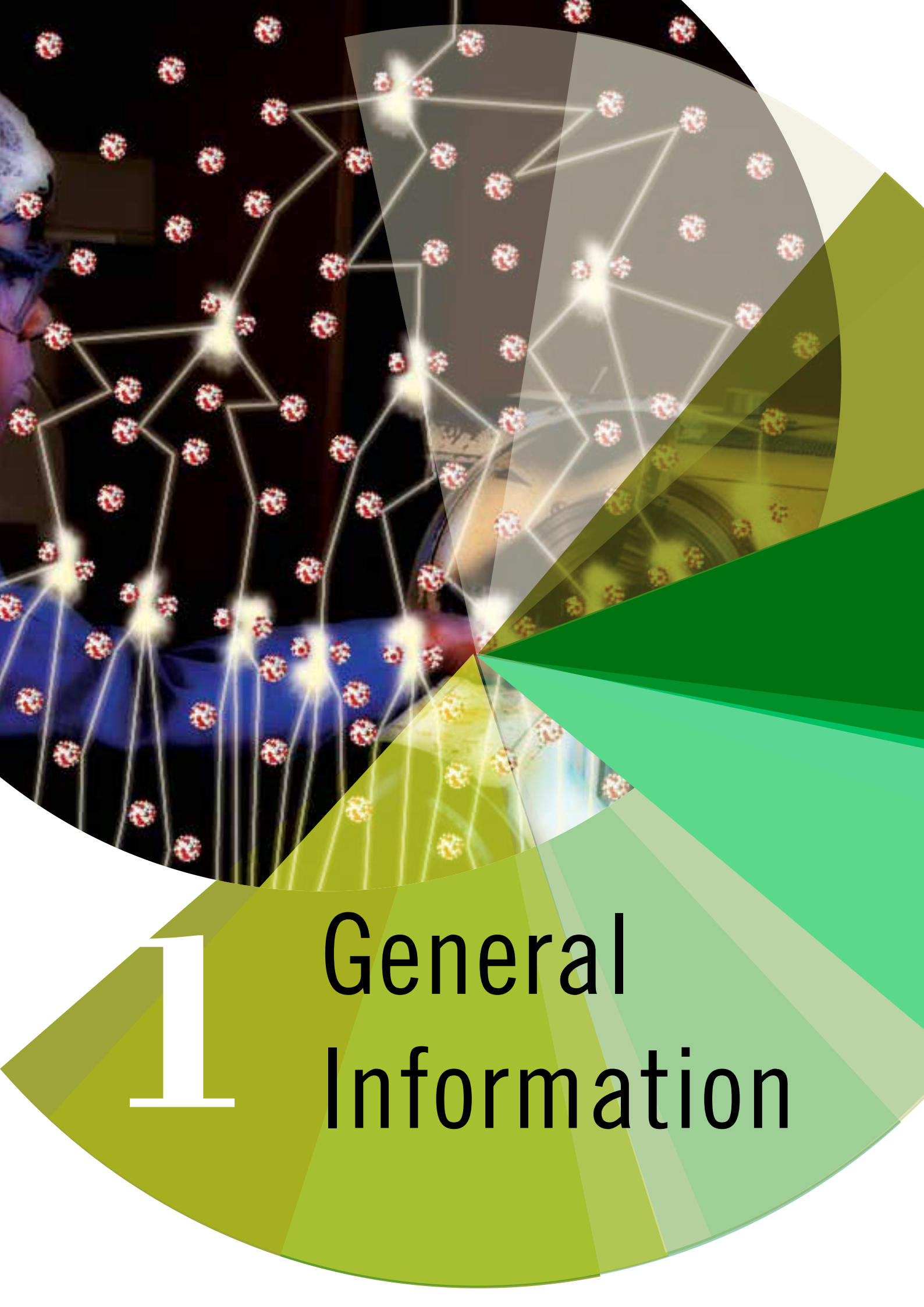
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ABBREVIATIONS AND ACRONYMS

AGSA	Auditor-General of South Africa
ALARA	As Low As Reasonably Achievable
ANSTO	Australian Nuclear Science and Technology Organisation
API	Active Pharmaceutical Ingredient
ASME	American Society for Mechanical Engineers
B-BBEE	Broad-Based Black Economic Empowerment
BBS	Behaviour-Based Safety
CHIETA	Chemical Industries Education and Training Authority
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organisation
D&D Stage 1	Decontamination, Decommissioning and Waste Management of Disused Historical Nuclear Facilities
D&D Stage 2	Decontamination, Decommissioning and Waste Management of Operating Nuclear Facilities
DIIR	Disabling Injury Incidence Rate
DoE	Department of Energy
DST	Department of Science and Technology
dti	Department of Trade and Industry
EAP	Employee Assistance Programme
EE	Employment Equity
EXCO	Executive Committee
GMP	Good Manufacturing Practice
HF	Hydrogen fluoride
IAEA	International Atomic Energy Agency
IAEA MSP	International Atomic Energy Agency Membership Support Programme
ICT	Information and Communication Technology

IDC	Industrial Development Corporation
ISI	International Scientific Indexing
ISO 9001	Quality Management Systems - Requirements
KPI	Key Performance Indicator
LEU	Low Enriched Uranium
Molybdenum-99	A radioactive isotope of molybdenum
MTEF	Medium-Term Expenditure Framework
Necsa	South African Nuclear Energy Corporation SOC Limited
NEHAWU	National Education, Health and Allied Workers Union
NIASA	Nuclear Industry Association of South Africa
NKP	National Key Point
NNR	National Nuclear Regulator
NQF	National Qualifications Framework
NRF	National Research Foundation
NRWDI	National Radioactive Waste Disposal Institute
NTeMBI	Nuclear Technologies in Medicine and the Biosciences Initiative
NuMeRI	Nuclear Medicine Research Infrastructure
NVC	Necsa Visitor Centre
OSCAR	Overall System for the Calculation of Reactors
PFMA	Public Finance Management Act
PSIF	Public Safety Information Forum
PSMA	Prostate-Specific Membrane Antigen
R&D	Research and Development
RPTC	Radiation Protection Training Centre
SAFARI-1	South African Fundamental Atomic Research Installation





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General Information

ABOUT THIS INTEGRATED ANNUAL REPORT

NECSA'S ORIGINS

On 13 August 1944, the United Kingdom first requested South African's assistance in obtaining uranium for the Manhattan Project. Post-World War II, interest in the extraction of uranium oxide continued from the USA and UK for both military and peaceful purposes. This led to the establishment in February 1946 of the "Uranium Research Committee" and in September 1948, the South African Atomic Energy Board (AEB) was constituted. Following international developments in nuclear power and radioisotope application, construction of the National Nuclear Research Centre, including the SAFARI-1 Research Reactor, started at Pelindaba in 1961.

In 1970, the Uranium Enrichment Corporation (UCOR) was created and tasked to establish a nuclear fuel cycle programme at Valindaba, adjacent to the then Pelindaba site. The ostensible aim was to investigate the feasibility of nuclear explosives for peaceful applications. However, in 1977 the emphasis changed to a strategic nuclear weapons deterrent capability and in November 1979 the first nuclear explosive device was equipped with highly enriched uranium.

Application of nuclear fuel cycle technologies to civilian nuclear power generation started with construction of the "Z" Enrichment Plant in 1978. A fuel element manufacturing facility supplying Koeberg Nuclear Power Station started production in 1987.

Meanwhile, the Nuclear Energy Act of 1982 renamed the AEB to NUCOR and combined it with UCOR under the Atomic Energy Corporation (AEC) as controlling body. On 01 July 1985, the NUCOR and UCOR subsidiaries were combined into the AEC. Dismantling of the nuclear deterrent capability started in 1989. While civilian use of the nuclear fuel cycle facilities proved uncompetitive post 1994 and were systematically shut down. A drive to industrialise technologies emanating from the nuclear programme was launched. In 1999, the current Nuclear Energy Act transitioned the AEC to the South African Nuclear Energy Corporation-Necsa.

NAME AND REGISTRATION NUMBER

The South African Nuclear Energy Corporation, trading as Necsa, is a state owned company (SOC).

Registration number:	2000/003735/06
Holding Company:	Department of Energy
Country of Incorporation and Domicile:	South Africa
Physical and Business Address:	Elias Motsoaledi Street Extension (Church Street West) R104 Pelindaba Brits Magisterial District Madibeng Municipality North West Province, 0240
Postal Address:	PO Box 582, Pretoria, 0001 South Africa
Telephone Number:	+27 12 305 4911
Fax Number:	+27 12 305 3111
E-mail Address:	communication@necsa.co.za
Website Address:	www.necsa.co.za
External Auditors:	Auditor-General of South Africa 300 Middel Street New Muckleneuk, Pretoria
Bankers:	Nedbank Limited 135 Rivonia Road Sandown, Sandton
Company Secretary:	Fulufhulani Corporate Governance and Legal Advisory (Pty)Ltd 105 Ninth Road Carlswald Midrand, Johannesburg, 1685
Enquiries regarding this report:	General Manager: Finance at +27 12 305 5678/5707 or mbali.mfeka@necsa.co.za



NECSA STRATEGY

STRATEGIC OVERVIEW

Our Vision

The Necsa Group is a world leading nuclear technology organisation that adds significant value to the economy and quality of life of citizens.

Our Mission

To develop and utilise nuclear technologies which make a socio-economic impact through materials beneficiation and commercialisation of technologies. This will be achieved through environmentally responsible application of core nuclear and related technologies.

Our Values

- Foundational values – Integrity, Respect, and Accountability;
- Business values – Excellence, Innovation, and Stakeholder Orientation; and
- People values – Trust and People Orientation.

Our Strategy

The long-term strategy of the Necsa Group builds on its core research and technology development mandate to ensure sustainability and growth of the Necsa Group while meeting the nuclear related needs of South Africa. The reality of constrained government funding, challenging commercial operating conditions, and transformation imperatives were incorporated into the current strategy.

The following seven impact areas were identified as key areas from which Necsa derives most of its value:

- Industrial Applications;
- Medical Diagnostics and Therapy;
- Materials Beneficiation;
- Nuclear Waste;
- Non-Proliferation of Nuclear Materials;

- Nuclear Manufacturing, and
- Clean Energy.

LEGISLATIVE MANDATE

The South African Nuclear Energy Corporation is listed as a Major Public Entity in PFMA Schedule 2. The company's legislative mandate in terms of Section 13 of the Nuclear Energy Act, No. 46 of 1999, is to

- Undertake and promote research and development in the field of nuclear energy and radiation sciences and technology and, subject to the Safeguards Agreement, to make these generally available;
- Process source material, special nuclear material, and restricted material, and to reprocess and enrich source material as well as nuclear material; and
- Co-operate with any person or institution in matters falling within these functions, subject to the approval of the Minister.

Section 14 of the Act outlines the ancillary powers, functions of the corporation on behalf of government. This includes amongst other functions, the institutional responsibilities. Necsa must execute the operation and utilisation of SAFARI-1, decommissioning and waste management, and international obligations.

The South African Nuclear Energy Policy of 2008 directs Necsa to:

- Investigate the entire nuclear fuel cycle with the aim of re-establishing fuel cycle facilities;
- Serve as the anchor for nuclear energy research, development, and innovation in South Africa.

Business Model

Necsa's business model leverages Necsa's knowledge base, legacy infrastructure investment, and ongoing R&D in the fulfilment of the State's nuclear obligations as well as the pursuit of commercial ventures. Uniquely among the major public entities, Necsa needed to significantly repurpose its strategic legacy investment to the benefit of the new South Africa. This includes core facilities such as the South African Fundamental



Atomic Research Installation (SAFARI-1) Research Reactor being used both for research and radioisotope production. Financial input in the form of a government grant and commercial income serves to sustain the company's activities. Activities serving primarily to fulfil nuclear obligations are concerned with Nuclear Waste Management, Nuclear Safeguards, Proliferation Prevention.

Activities mainly aimed at commercial income involve NTP Radioisotopes SOC Ltd, Pelchem SOC Ltd, and Pelindaba Enterprises. NTP produces a range of radiation-based products and services for healthcare, life sciences, and industry, while Pelchem supplies fluorine-based products into various industries. Pelindaba Enterprises serves as incubator intended to commercialise Nuclear Engineering and Manufacturing Services on the strength of its ASME and ISO certifications.

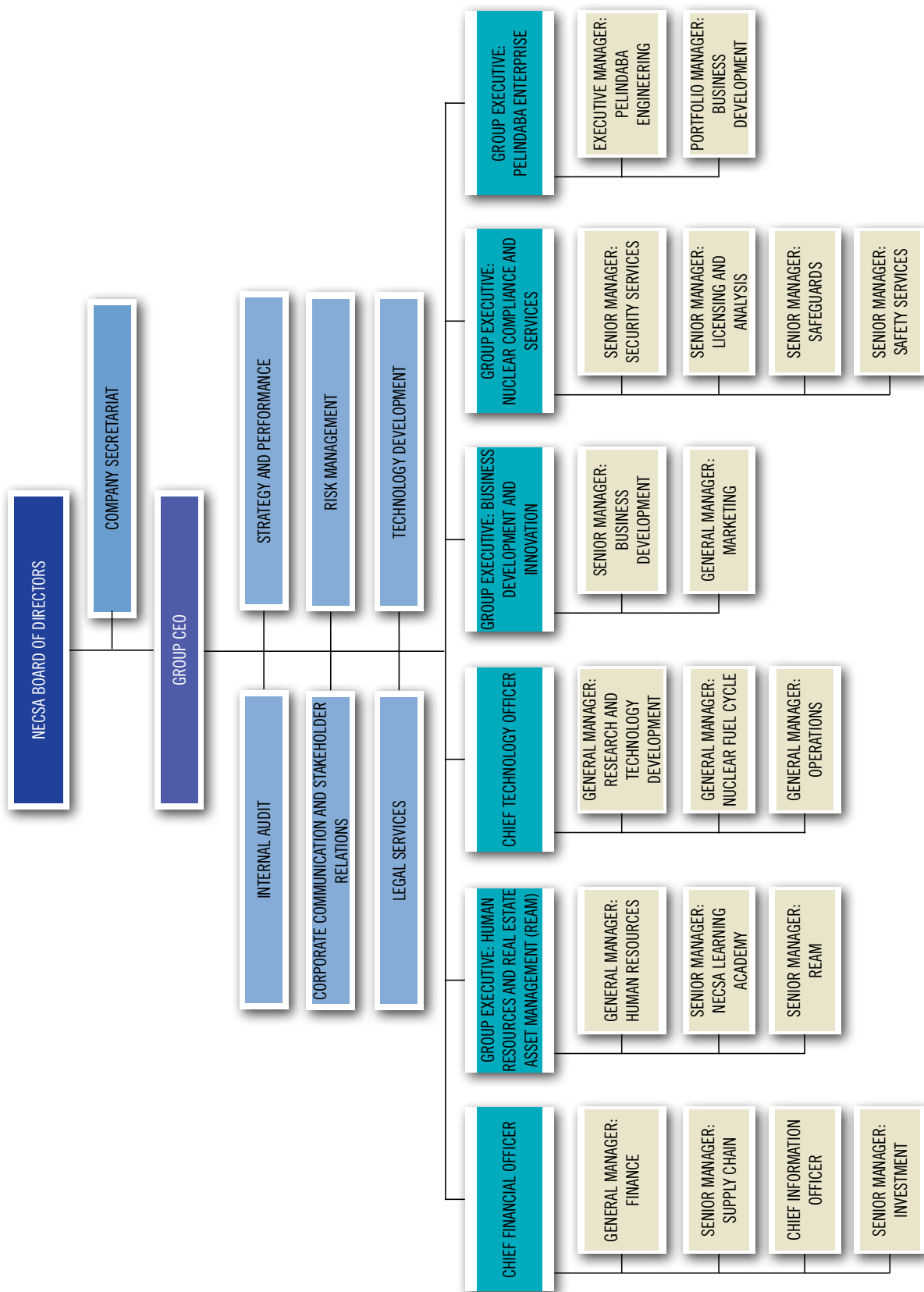
In terms of the Integrated Reporting Framework, the outcomes affected by this model improve the country's stock of human and intellectual capital, preserves the country's natural capital, the health of its human capital, and enables manufactured capitals in industry. The fulfilment of nuclear obligations builds relationship capital in the form of international goodwill.

Opportunities being exploited in this business model include Necsa's position as the only South African entity legally allowed to process nuclear materials, as well as NTP's access to an integrated radioisotope supply chain from source material to waste management. Future opportunities relate to the nuclear new build and the growing international market for nuclear decontamination and waste management services.

Risks affecting Necsa's business model include the age of facilities such as the SAFARI-1 Research Reactor, declining government grant, as well as competitive dynamics in its commercial markets.



ORGANISATIONAL STRUCTURE





Ms P Kingston - Interim Chairperson of the Board



Chairperson's Foreword

Introduction

The Necsa Group is a world-leading nuclear technology organisation which continues to add significant value to South Africa through the environmentally responsible application of a range of nuclear technologies. The Necsa Integrated Annual Report, for the fiscal year ended 31 March 2019 is presented to all our stakeholders against a backdrop of significant challenges, mainly of a financial, leadership and management nature, faced by the organisation.

Overview

It is important to note that the current Necsa Board was appointed by The Minister of Energy in December 2018 and has only effectively been in place for the last three months of the period under consideration.

Necsa's primary challenges, relating to its historical financial sustainability and attendant leadership, remain a key issue that the current Board is committed to resolving. To this end, the Board together with Executive management, is finalising a comprehensive Turnaround strategy for the organisation which is designed to guide the organisation to a place of financial stability and ultimately, profitability. This journey and process is a challenging and uncomfortable one but one which we believe is essential if we are to transform Necsa into a world class leading nuclear technology company.

In this regard, as a Board member, I have steered the Board in enhancing our corporate governance practices in line with King IV Report on Corporate Governance and organisational sustainability, while conducting the Group's business with absolute integrity.

The process of augmenting the independent boards of Necsa subsidiaries with directors who are seasoned, technically experienced for the purposes of effective oversight in terms of the implementation of the finalised and approved 5 year Turnaround Strategy - taking into account issues of youth, gender balance, succession, worker representation and shareholder representation is well underway. A disciplined reporting structure which ensures that suitable governance practices are applied and that the holding company board is kept informed of all relevant and key decisions and progress will be a particular focus.

The Necsa turnaround strategy assesses the return on investment of public funding and has identified the following key impact areas:

- Industrial Applications;
- Medical Diagnostics and Therapy;
- Materials Beneficiation;
- Nuclear Waste Handling;
- Non-Proliferation of Nuclear Materials;
- Nuclear Manufacturing, and
- Clean Energy.



Overall Performance

Necsa continued to provide for South Africa's nuclear obligations in terms of international safeguards and nuclear waste management without any incident.

The Group's financial performance was less than satisfactory as NTP recorded a net loss which was 203.8% below budget. This was due to NTP's prolonged stoppage from 17 November 2017 after it discovered procedural deviations related to a set of standard operating protocols. Necsa corporate external sales were still below target by R71.5m. As a world leader in the field of nuclear medicine we are setting ambitious expansion goals to consolidate our dominance even further.

The Pelchem subsidiary recorded a loss of R77m, attributable to historic undercapitalisation which in turn compromised plant availability. Certain Pelchem products are also produced at an uncompetitive scale in some markets. However, the products are of extreme strategic value to the country since Pelchem is the only producer in the southern hemisphere. We are currently carrying out an examination of the consolidation and expansion of Pelchem activities, which includes an assessment of the capital that is required to upgrade the ailing infrastructure of the facilities.

Necsa continued to carry out valuable scientific investigations and development in support of a range of nuclear applications. Research papers were published internationally and Necsa specialists contributed to international conferences and study groups, thereby enhancing the international image of South Africa.

Something to be proud of is the highly skilled artisan training provided by Necsa. No nuclear technology can progress without the valuable input of a cadre of skilled artisans. Necsa is acutely aware of this and is concentrating on these activities to provide suitable skills for nuclear power development. Necsa has continued to make progress on its transformation journey and this matter remains a key issue that the Board will continue to focus on.

Strategic Relationships

A network of key strategic relationships in the nuclear and related technology domains is of vital importance. Necsa has continued to support the National System of Innovation through initiatives such as its partnership with iThemba LABS and NTeMBI. Involvement was also fostered in strategic international collaborative programmes relating to the application of nuclear and radiation science and technology.

Challenges

The Board recognises that Necsa has been experiencing increasing pressure on its financial, human and infrastructure resources due to historical financial challenges thus impacting on its sustainability. This is further exacerbated by the combined effect of rising operating costs, a declining government grant in real terms and pressure on its non-grant revenue streams.

Outlook

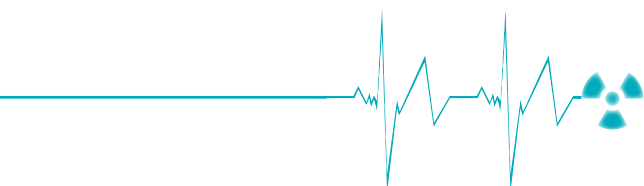
Necsa provided its comments to the draft 2018 IRP which was issued by the DoE for comment. Necsa's view is premised on a Nuclear New Build Programme which will develop skills, create sustainable jobs, and contribute to dynamic economic growth in South Africa and the wider African continent. Necsa is actively working towards fulfilling its role in nuclear power development, which will contribute to national growth, infrastructure development and job creation at all levels.

We anticipate that global conditions will continue to be fluid. Such a state of affairs provides challenges, but it also provides good potential growth opportunities. The Board will continue to urge expansion into available markets while exercising the necessary caution.

Acknowledgements

Despite significant economic challenges, Necsa has grown stronger as a company, thanks in large part to the dedication of our people, at all levels of the organisation.

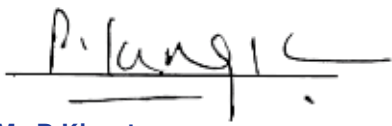
On behalf of the Board, I also wish to express our sincere appreciation to the Acting Group CEO, Mr Ayanda Myoli and his Executive Team for their continued stewardship of the Necsa Group this past year.



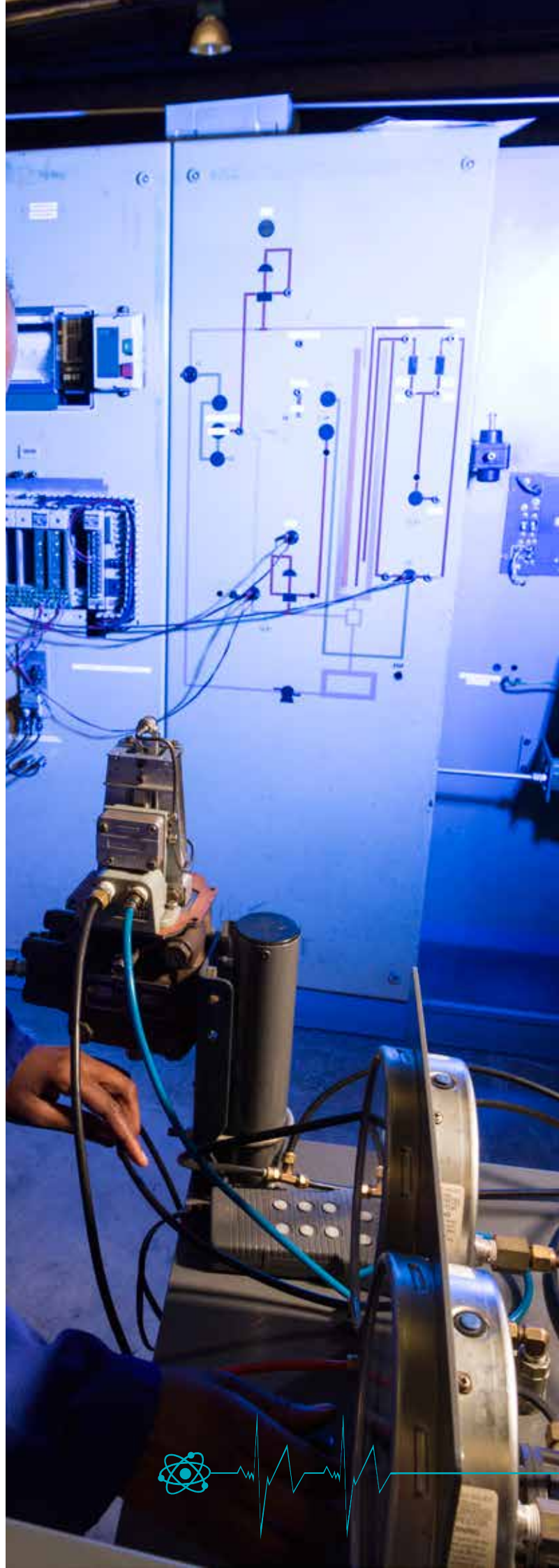
The Board acknowledges the support and guidance from our Executive Authority, the Department of Energy. The board also acknowledges the role that organised labour has and continues to play in ensuring that we continue to prioritise workers' interests in a manner that is in the best interests of the organisation.

Conclusion

The South African nuclear industry is on the brink of a new era of development. Necsa remains robust and ready to tackle the demands to be placed on it. Necsa is also moving towards the development and expansion of new opportunities and markets internationally.



Ms P Kingston
Interim Chairperson of the Board





CEO'S Overview

Mr A Myoli - Acting Group Chief Executive Officer

During the reporting period, the local manufacturing sector continued to reflect the global economic malaise with specific impacts on Pelindaba Enterprises and Pelchem. This aggravated the severe financial constraints on Necsa due to its comparatively high fixed cost base.

As far as organisational performance is concerned, Necsa only met or exceeded five of its fourteen key performance indicators. The most noteworthy successes include innovation disclosures, research publications, the very low public radiation dose impact and increase in Black technical staff. Three of the performance indicators not achieved relate to the financial performance of NTP, Pelchem and Necsa corporate.

Key turnaround initiatives required for Necsa's sustainability have been identified as part of a recent strategic planning process focussing on seven impact areas.

Achievements by Programme Cluster

Nuclear Energy Programme Cluster

While Pelchem is the Necsa Group custodian of fluorine technology vital to re-establishment of the Nuclear Fuel Cycle, its operating loss of R77m remained a cause for concern. This is attributable to unreliable plant as well as declining demand for some of its products. However, prospects to rationalise offerings and exploit new growth opportunities continue to be pursued. Plant availability remains a serious concern, however the IDC loan which

was approved will enable Pelchem to deal with this. Pelchem has initiated Project Thuthukani which entails the construction of appropriately scaled fluorochemical plants in alignment with government policy to increase beneficiation of local fluorspar. Pelchem also intends entering the domestic pharmaceutical market to supply essential medicines for HIV/AIDS, TB, Malaria through its subsidiary Ketlaphela SOC Ltd. This programme is in partnership with the dti and national Department of Health.

Radiation Products and Services Programme Cluster

The NTP Group operating loss was R146.52m, R287m below budget. The significant negative financial consequences as a result of NTP's prolonged stoppage from 17 November 2017 after it discovered procedural deviations related to a set of standard operating protocols is evident.

The Security of Supply of Fuel and Target Plates programme for the sustained operation of SAFARI-1 and NTP Radioisotopes remains in progress.

Execution of the DST NuMeRI (Nuclear Medicine Research Infrastructure) programme is still progressing well. Necsa received the third tranche for NuMeRI from the DST to the amount of R46.1m. NuMeRI hosts for main facility, Steve Biko Academic Hospital and the University of Pretoria (UP), registered non-profit company as future governance vehicle.



Necsa as Host of Nuclear Programmes Cluster

Performance on the execution of the Stage 1 Decommissioning and Decontamination programme was not satisfactory with an achievement of only 85% of the planned activities for the year.

Necsa's safety performance improved in comparison to the previous financial year with a Disabling Incident Injury Rate of 0.68 being achieved.

A total of sixty one (61) inspections were performed at various facilities under the Comprehensive Safeguards Agreement and the Additional Protocol during the reporting period. All inspections carried out were conclusive and met the safeguards requirements.

Cross-Cutting Programmes Cluster

Necsa Corporate Sales were not achieved with actual performance falling R71.5m short of budget.

Refereed research publications again exceeded target as did innovation disclosures.

Technical staff as percentage of total staff fell slightly below target but Black technical staff continued their upward trajectory reaching 64.87% of all technical staff.

Necsa continued to produce a pipeline of skills for South Africa across the spectrum from artisans to graduates to post-doctoral candidates.

Necsa entered into a strategic partnership with Gauteng Department of Education (GDE) which resulted in the launch of two Nuclear Technology Schools of Specialisation, namely Edward Phatudi and Phelindaba Secondary School, both located in Atteridgeville. The official launch took place on 24 April 2018.

International collaboration continued through participation in a variety of IAEA meetings, expert missions and technical co-operation programmes.

Outlook

Sluggish, albeit improved, economic growth is expected to continue, not only negatively impacting commercial revenues but also constraining the support that can be

provided by Government. In addition, political and legal challenges to the growth of the South African nuclear industry will need to be navigated.

Highlights of Future Plans and Projects

The Necsa Group's primary focus going forward is for all businesses and functions to operate sustainably. Specific growth prospects for the near future include:

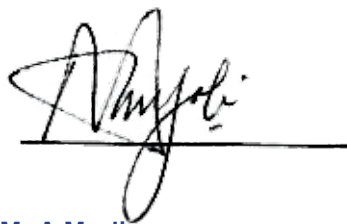
- Nuclear new build programme in which Necsa will be instrumental in localisation and the nuclear fuel cycle;
- The multi-purpose research reactor (MPR) project to replace SAFARI-1;
- Pelchem's continued progress with product line rationalisation, plant refurbishments, the Thuthukani project and the Ketlaphela project;
- NTP's sustainable return to service programme, new NTP production capacity and business initiatives;
- Expansion of the NTeMBI network and radiopharmaceutical clinical trials; and
- Further leveraging Necsa's intellectual property portfolio.

Acknowledgements

I wish to express my sincere gratitude to the entire Necsa Group staff for their efforts, the Office of the CEO for unfailing support, members of EXCO for their commitment and the Necsa Board for its sound guidance.

Conclusion

The South African Nuclear Energy Corporation will continue on its challenging but exciting mission to bring the benefits of nuclear technologies and nuclear power to the people of our country.



Mr A Myoli

Acting Group Chief Executive Officer





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Highlights of 2018/19



PLASMA DISSOCIATED ZIRCONIUM/PIGMENTS



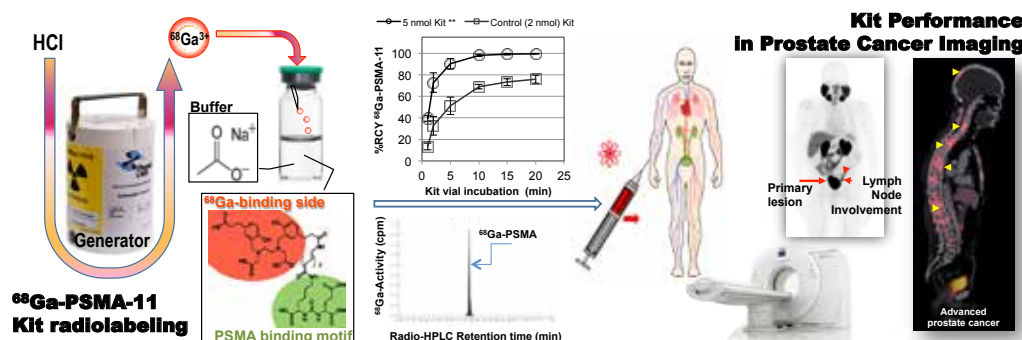
Necsa has developed a process for the production of inorganic doped zircon pigments (blue, yellow and iron pink) and Plasma Dissociated Zircon (PDZ) which is aligned to the country's minerals beneficiation objective. Under a license from Necsa, Brinni Beneficiation Technologies (Pty) Ltd - a start-up company owned by Industrial Development Corporation (IDC) and Ishango Scientific Systems Pty Ltd, shall manufacture zirconium pigments for sale to the ceramics industry. A feasibility study was completed by Brinni through R4m funding made available by IDC.



GA-68-PSMA

Ga-68-PSMA is a diagnostic drug for prostate cancer (see technical details in the R&D section of this Annual Report).

A partnership was secured between the Nuclear Medicine department at Steve Biko Academic Hospital and NTP Radioisotopes Ltd. Steve Biko Hospital expressed their intent to be the local off-taker for the Ga-68-PSMA product kit. NTP has approved funding of R4.5 Million from its Research and Development and Innovation Fund towards technology development to conduct activities related to Good Manufacturing Practice in kit formulation. It is intended that NTP will be the market-facing entity to market and sell product kits.

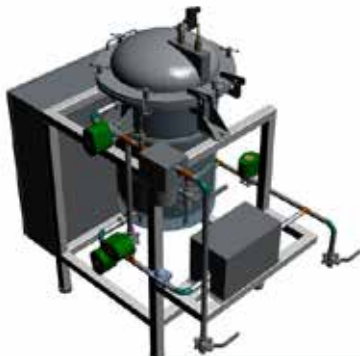




DRYKEEP® AND AIR-DUST FILTERS (FLOSEP™ BUSINESS EXPANSION)

Necsa has developed an online drying unit based on its successful Drykeep® technology. This technology provides for the continuous removal of water in transformer oil, thereby eliminating the need for the periodic transformer maintenance shutdowns and associated production losses. The technology has been industry-tested and is already in commercial use. Drykeep® was developed by Necsa's Flosep™ business which also sells air dust filters to industry.

To ensure Flosep™ successfully responds to increased demand, Necsa has entered into a public-private partnership with SETTEC Industrial Solutions who will serve as a Marketing, Sales and Distribution partner for the Drykeep® and Flosep™ air filter technologies.



Drykeep® Prototype



TOP INTELLECTUAL PROPERTY CREATOR AWARD



Dr. Jan Rijn Zeevaart

Dr. Jan Rijn Zeevaart from Necsa Radiochemistry Department was awarded the Top Intellectual Property Creator Award in terms of actionable disclosures made to the Necsa office of technology transfer between the period 01 April 2011 to 31 March 2018. A monetary contribution of R 605 000 was received from for the Office of Technology Transfer at Necsa, to drive technologies from IP creation to innovation as a product, process or service with impact. The award was presented by the former Minister of Science and Technology Ms Mmamoloko Kubayi-Ngubane, at a distinguished dinner hosted by the NIPMO IP Creators. The awards are meant to recognise Top IP creators' contribution to an innovation agenda intended to address the triple challenge of poverty, inequality and unemployment and government outcomes.





TERBIUM-161 PSMA

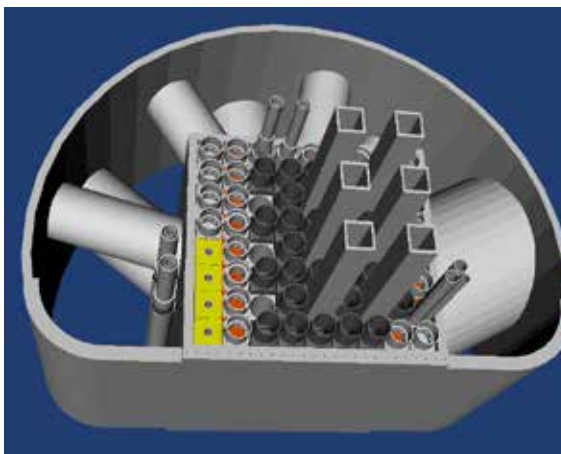
Necsa Radiochemistry Department was part of an international team that won the Marie Curie Award for best oral presentation, “Terbium-161 for PSMA-Targeted Radionuclide Therapy of Prostate Cancer” at the 31st Annual European Association of Nuclear Medicine (EANM) conference held in Dusseldorf in October 2018. The other team members are from distinguished European institutes such as; Paul Scherrer Institute - Switzerland, University of Zurich - Switzerland, University of Gothenburg, - Sweden and Institute Laue-Langevin, France. This Isotope is reactor based and is expected to replace Lutetium-177 due to its additional Auger emissions (very short range) which enable the irradiation of micro metastases that form due to Neuroendocrine and Prostate cancers.



Linear Accelerator



LICENSING OF NECSA'S OSCAR COMMERCIAL CODE:



Further evidence of Necsa's excellence in the area of radiation science was the development of the OSCAR-5 (Overall System for the Calculation of Reactors, Version 5) system, which was released early in 2019 for client use. It represents a step-change in the development history of the OSCAR system, as it has now moved into a high fidelity, multi-code, multi-physics space, as opposed to a pure neutronic nodal diffusion package. The system was benchmarked against a large multi-reactor benchmark set developed by the IAEA, and descriptions of OSCAR-5 are published at a number of International research reactor conferences.





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Key Performance Information

Performance measurement facilitates accountability by enabling governance stakeholders, parliament and members of the public to track Necsa's progress. There is alignment in terms of Necsa's Strategic Outcome Orientated Goals and Performance Indicators across the Shareholder Compact with the Department of Energy, Corporate Plan and Estimates of Expenditure.

STATEMENT OF RESPONSIBILITY FOR PERFORMANCE INFORMATION

The Board, as Accounting Authority, is responsible for implementing a system of internal controls to provide reasonable assurance as to the integrity of the performance information, human resources information and the Annual Financial Statements.

The Chief Executive Officer (Accounting Officer) is responsible for the preparation of Necsa's performance information and for the judgements made in this information.

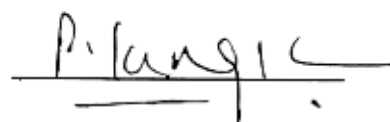
This Annual Report has been prepared in accordance with the guidelines issued by National Treasury. The Annual Financial Statements have been prepared in accordance with International Financial Reporting Standards (IFRS).

The Auditor-General of South Africa has examined the company's Annual Financial Statements and Predetermined Objectives for the year ended 31 March 2019 and their report is presented on page 135. All information disclosed in this Annual Report is consistent with the Annual Financial Statements as audited by the Auditor-General.

Yours faithfully



Mr A Myoli
Acting Chief Executive Officer
Date:



Ms Pulane Kingston
Interim Chairperson of the Board
Date:



AUDITOR GENERAL'S REPORT: PREDETERMINED OBJECTIVES

The Auditor-General of South Africa currently performs the necessary audit procedures on the performance information to provide reasonable assurance in the form of an audit opinion. The audit opinion on the performance against Predetermined Objectives is included in the report to management, with material findings being reported under the Predetermined Objectives heading in this report.

Refer to page 135 of this report for the Independent Auditor's Report on Predetermined Objectives.

OVERVIEW OF PUBLIC ENTITY'S PERFORMANCE

Service Delivery Environment

Given Necsa's mandates relating to research and development and national nuclear obligations, the company is not directly involved in service delivery to the public.

Prevailing economic conditions affected Necsa significantly, both limiting support from the fiscus as well as commercial revenues. Pelchem suffered from plant reliability issues. Pelindaba Enterprises was impacted by continued weakness in the local manufacturing sector although ageing related replacement of equipment at the Koeberg Nuclear Power Station is providing opportunity. NTP Radioisotopes experienced regulatory imposed production stoppages for a large proportion of the year. In addition, a multitude of international competitors for its primary pharmaceutical product are expected to enter production in the near to medium term.

Organisational Environment

The most significant internal organisational challenge continues to be financial constraints. Although Necsa reflects a profit during 2018/19 it should be noted that the overall performance of the company was enhanced by Decommissioning and Decontamination adjustments. Moreover, significant operational challenges were experienced by both the company and the group resulting in unfavourable positions respectively.

Ongoing leadership uncertainty - following the replacement of the Board and CEO in December 2018 - negatively affected morale.

Key Policy Developments and Legislative Changes

During the reporting period, the Public Audit Amendment Act was promulgated. This provides for the Auditor-General to refer suspected material irregularities for investigation, to take appropriate remedial action and to issue a certificate of debt where an Accounting Officer or Accounting Authority failed to recover losses. South Africa's power generation technology preferences are contained in the Integrated Resource Plan (IRP) which has been the subject of extensive consultative processes. After the final leg of this process at NEDLAC (National Economic Development and Labour Council), the IRP will be tabled at Cabinet for approval. However, there is a strong indication that the nuclear build programme will be significantly postponed.



STRATEGIC OUTCOME ORIENTED GOALS

The long term strategy of the Necsa Group builds on its core research and development mandate to ensure sustainability and growth while meeting the nuclear related needs of South Africa.

Necsa's Vision statement is described below:

In terms of Necsa's long-term strategy, in 2027 Necsa envisages itself as a highly profitable, world-class organization that boasts a substantive and successfully commercialized portfolio of intellectual property and the capability to manufacture nuclear products and components. Having introduced a new multi-purpose research reactor, the company owes its success to its world class technological capability, R&D programmes and increased national competence in terms of design, quality management, project management and architect engineering. Its robust incentive schemes (for workers and suppliers) have resulted in sustainable income streams with positive impacts on society and key stakeholder groups.

Necsa intends deriving value through the following Key Impact Areas:

- Industrial Applications;
- Medical Diagnostics and Therapy;
- Materials Beneficiation;
- Nuclear Waste Handling;
- Non-Proliferation of Nuclear Materials;
- Nuclear Manufacturing; and
- Clean Energy.

Necsa's objectives are grouped into three Strategic Clusters:

Nuclear Power Cluster

The Nuclear Power Cluster comprises Necsa's nuclear fuel development and production programmes. Projects in support of the South African nuclear power programme are intended to expand Necsa's expertise, technology base and infrastructure to enhance the security of local nuclear fuel supply and enter the global market. The key strategic objectives for this cluster are:

- To assess the viability of a future industry servicing the front end nuclear fuel cycle in South Africa and to progress towards the development and demonstration of the required technologies;
- To prove the viability of Pelindaba Enterprises (Pelindaba Manufacturing; Pelindaba Engineering Services and Pelindaba Consulting Services); and
- To ensure the retention of competitive commercial fluorine capability through Pelchem's strategy for growth and sustainability.

Radiation Science and Applications Cluster

This cluster includes radiation science research and products based on the SAFARI-1 Reactor and Necsa's related expertise. The Necsa Group will maintain and expand its global leadership position in the supply of medical radioisotopes through expansion of its product portfolio and the eventual replacement of the SAFARI-1 Research Reactor. The key strategic objectives for this cluster include:

- To maintain full operational capability of SAFARI-1 and implement the reactor's ageing management programme;
- To expand SAFARI-1 based R&D facilities and outputs;
- To develop and implement the project to ensure security of supply of LEU, LEU fuel and LEU target plates;
- To secure core strategic capability through the replacement of SAFARI-1 by a Multi-Purpose Research Reactor before it reaches the end of its operational lifetime; and
- To grow NTP Radioisotopes Group net profit from R159.5m (2017/18 forecast) to R177.4m by 2020/21.

Necsa as Host of Nuclear Programmes Cluster

This cluster refers to Necsa's capacity to house nuclear programmes due to its licensed nuclear infrastructure, specialized supporting capabilities and integrated SHEQ management system. The key strategic objectives for this cluster include:



- To increase Necsa's research, development and innovation outputs;
- To constantly improve SHEQ management performance;
- Improving pre-disposal waste management activities; and
- To maintain infrastructure at a suitable level.

PERFORMANCE INFORMATION BY PROGRAMME CLUSTER

Performance against planned indicators and targets, as contracted in the Shareholder Compact – 2018/19 between Necsa and the Minister of Energy, is presented in the prescribed tabular format.

Nuclear Energy Programme Cluster

The purpose and strategic objectives relating to this programme are described in the preceding section. During the year under review there were no amendments to the planned targets.

Nuclear Energy Programme Cluster: Performance Indicators, Planned Targets and Actual Achievements

Key Performance Area	Key Performance Indicator	Actual Achievement 2017/2018	Planned Target 2018/2019	Actual Achievement 2018/2019	Deviation from Planned Target 2018/2019	Comment on Deviation
Pelchem Group financials	Net profit after tax	(R35.57m)	(R10.20m)	(R75.00m)	(R65.00m)	• Target not met - HF Plant unavailability. • Actual achievement disclaimed by AG.



SAFARI -1 Neutron Diffraction Beamlines

Radiation Products and Services Programme Cluster

The purpose and strategic objectives relating to this programme are described in the preceding section. During the year under review there were no amendments to the planned targets.

Radiation Products and Services Programme Cluster: Performance Indicators, Planned Targets and Actual Achievements

Key Performance Area	Key Performance Indicator	Actual Achievement 2017/2018	Planned Target 2018/2019	Actual Achievement 2018/2019	Deviation from Planned Target 2018/2019	Comment on Deviation
NTP Group financials	Net profit after tax	R97.20m	R141.2m	(R146.52m)	(R287.72m)	Target not met - Mainly due to plant shutdown in P1701.
SAFARI-1 Operation	Operational availability (days per year)	299.7 days	287.0 days	267.1 days	(19.90 days)	The reactor was available but for 2021 target plate.

Necsa as Host of Nuclear Programmes Cluster

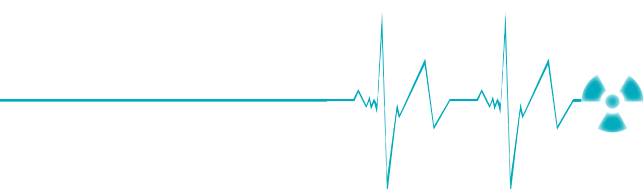
The purpose and strategic objectives relating to this programme are described in the preceding section. During the year under review there were no amendments to the planned targets.

Necsa as Host of Nuclear Programmes Cluster: Performance Indicators, Planned Targets and Actual Achievements

Key Performance Area	Key Performance Indicator	Actual Achievement 2017/2018	Planned Target 2018/2019	Actual Achievement 2018/2019	Deviation from Planned Target 2018/2019	Comment on Deviation
D&D programme execution	Execution of Annual Plan of Action as approved by DoE	113.7%	100%	85.15%	(14.85%)	Target not met: • Volume Reduction Facility hot commissioning delayed due to liquid in waste drums and the procurement of x-ray equipment. • Conversion facility decommissioning strategy and plan awaiting NNR approval.



Key Performance Area	Key Performance Indicator	Actual Achievement 2017/2018	Planned Target 2018/2019	Actual Achievement 2018/2019	Deviation from Planned Target 2018/2019	Comment on Deviation
Compliance to SHEQ, license and other regulatory requirements	Disabling Injury Incidence Rate (DIIR)	1.01	<1.5	0.68	(55%)	Target exceeded.
	Public dose impact (expressed as % of NNR allowable limit)	2.780%	<20%	1.086%	(95%)	Target exceeded.



Cross-Cutting Programmes Cluster

The purpose of this programme is to manage activities of a cross-cutting nature not readily classified into the three preceding clusters. During the year under review there were no amendments to the planned targets, although the Necsa Corporate External Sales target had to be restated.

Cross-Cutting Programmes Cluster: Performance Indicators, Planned Targets and Actual Achievements

Key Performance Area	Key Performance Indicator	Actual Achievement 2017/2018	Planned Target 2018/2019	Actual Achievement 2018/2019	Deviation from Planned Target 2018/2019	Comment on Deviation
Necsa Corporate Financials	External Sales (Including Intra- Group Sales)	R388m	R473.9m (Shareholder compact indicates amount of R553.2m which includes Dividends Receivable and Sundry Income.)	R402.4m	(R71.5m)	Target not met - Divisions not meeting income targets but maintaining spending.
Innovation Value Chain	Innovation Disclosures	10	8	10	2	Target exceeded.
Research Outputs	Research Publications	45	29	38	9	Target exceeded.
Staff composition	Technical staff as % of total staff	45.33%	46.5%	44.95%	(1.55%)	Target not met – Proportionally larger number of retirements and resignations among technical staff.
	Black technical staff as % of all technical staff	61.51%	62%	64.87%	2.87%	Target exceeded.



SUMMARY OF FINANCIAL INFORMATION

Salient Features and Value-added Statements		
Salient Features of 2019		
Changes from 2018	Nominal %	Real %
State dependence for operating costs	0.0%	(4.5%)
Group sales	(19.1%)	(23.6%)
Company sales	3.7%	(0.8%)
Group sales per capita	(16.4%)	(20.9%)
Company sales per capita	8.2%	3.7%
Group expenses	0.9%	(3.6%)
Company expenses	(7.6%)	(12.1%)
Group personnel costs	10.1%	5.6%
Company personnel costs	6.3%	1.8%
Group operating expenses (salaries and allowances excluded)	(3.5%)	(8.0%)
Company operating expenses (salaries and allowances excluded)	(17.8%)	(22.3%)
Inflation adjustment used in all calculations is 4.5%		

Group	2019	2018	2017	2016	2015
	R'000	R'000	R'000	R'000	R'000
Income generated					
Sales and other income	2,053,953	2,027,936	1,781,507	1,881,844	1,512,054
Construction contracts	-	34,499	(11,966)	(21,349)	25,568
Government grant					
Operating Activities	493,469	495,711	446,046	436,479	417,421
Decommissioning and decontamination	77,165	73,473	61,691	58,609	57,997
LEU Fuel and conversion	19,967	21,344	8,418	1,087	-
Security	9,851	9,394	8,372	8,113	8,206
Deferred R&D Safari Grant Used	49	276	169	-	-
Safari 1	-	-	-	116	3,671
Deferred MTEF Grant Utilised for Activities	688	766	766	-	-
Other grants	15,070	56,669	37,774	38,411	32,781
Income from Investments	323,710	321,519	318,106	321,834	75,129
	2,993,922	3,041,587	2,650,883	2,725,144	2,132,827
Income distributed					
Employees	1,062,130	962,907	838,830	803,457	717,481
Providers of services, materials and products	1,858,988	1,974,158	1,554,793	1,394,575	1,322,710
Training and development	9,630	9,533	18,335	15,990	15,031
Government	13,489	50,888	108,974	98,254	47,878
Depreciation	85,437	97,530	81,560	77,965	65,770
Retained Income	(35,753)	(53,428)	42,232	327,210	(42,503)
Minority interest share of profit	-	-	6,159	7,693	6,460
	2,993,922	3,041,587	2,650,883	2,725,144	2,132,827

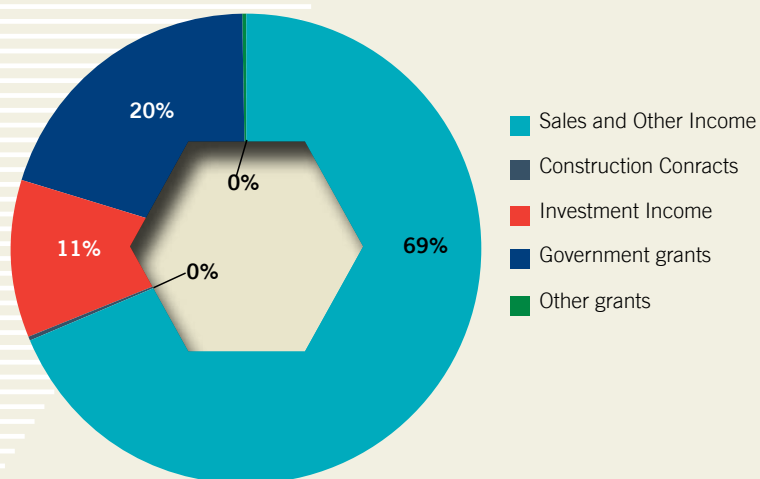
Group	%	%	%	%	%
Income generated					
Sales and other income	68.6%	66.7%	67.2%	69.1%	70.9%
Construction contracts	-	1.1%	(0.5%)	(0.8%)	1.2%
Government grant					
Operating Activities	16.5%	16.3%	16.8%	16.0%	19.6%
Decommissioning and decontamination	2.6%	2.4%	2.3%	2.2%	2.7%
LEU Fuel and conversion	0.7%	0.7%	0.3%	0.0%	-
Security	0.3%	0.3%	0.3%	0.3%	0.4%
Deferred R&D Safari Grant Used	0.0%	0.0%	0.0%	-	-
Safari 1	-	-	-	0.0%	0.2%
Deferred MTEF Grant Utilised for Activities	0.0%	0.0%	0.0%	-	-
Other grants	0.5%	1.9%	1.4%	1.4%	1.5%
Income from Investments	10.8%	10.6%	12.0%	11.8%	3.5%
	100.0%	100.0%	100.0%	100.0%	100.0%
Income distributed					
Employees	35.5%	31.7%	31.6%	29.5%	33.6%
Providers of services, materials and products	62.1%	64.9%	58.7%	51.2%	62.0%
Training and development	0.3%	0.3%	0.7%	0.6%	0.7%
Government	0.5%	1.7%	4.1%	3.6%	2.2%
Depreciation	2.9%	3.2%	3.1%	2.9%	3.1%
Retained Income	(1.2%)	(1.8%)	1.6%	12.0%	(2.0%)
Minority interest share of profit	-	-	0.2%	0.3%	0.3%
	100.0%	100.0%	100.0%	100.0%	100.0%
Difference	-	-	-	-	-

Group	
	100%
Sales and Other Income	68.6%
Construction Contracts	0.0%
Investment Income	10.8%
Government grants	20.1%
Other grants	0.5%
	100%
Employees	35.5%
Providers of services, materials and products	62.1%
Training and development	0.3%
Government	0.5%
Depreciation	2.9%
Retained Income	-1.2%
Minority interest share of profit	0.0%
	100%
Sales - Foreign	42.9%
Sales - Local	57.1%

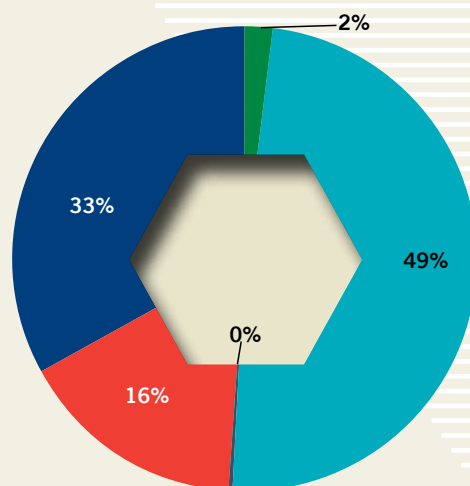
Company	
	100%
Sales and Other Income	48.6%
Construction Contracts	0.0%
Investment Income	16.4%
Government grants	33.5%
Other grants	1.5%
	100%
Employees	42.4%
Providers of services, materials and products	42.5%
Training and development	0.4%
Government	0.5%
Depreciation	3.3%
Retained Income	10.9%
Minority interest share of profit	0.0%
	100%
Sales - Foreign	7.4%
Sales - Local	92.6%



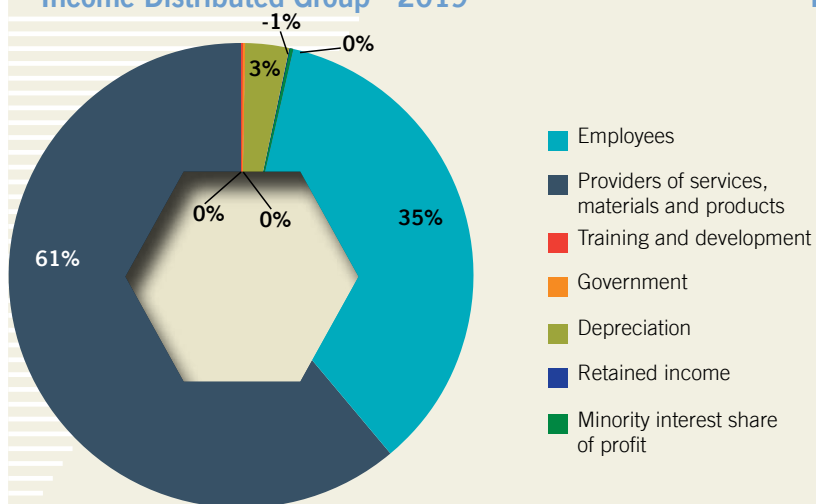
Income Generated Group - 2019



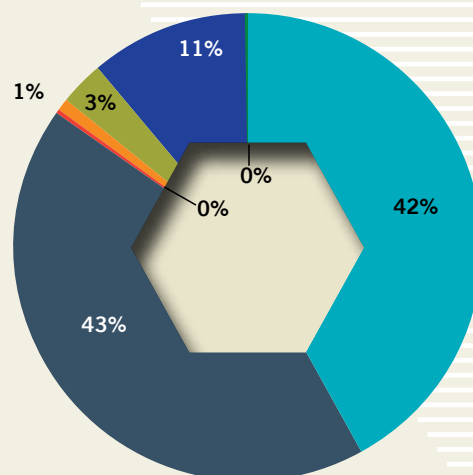
Income Generated Company - 2019



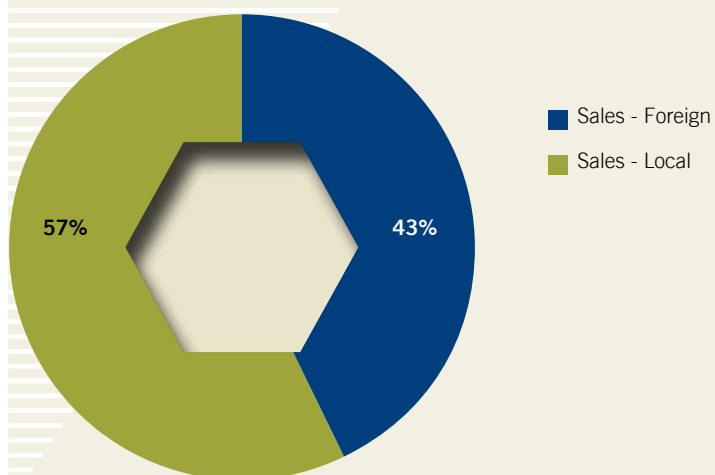
Income Distributed Group - 2019



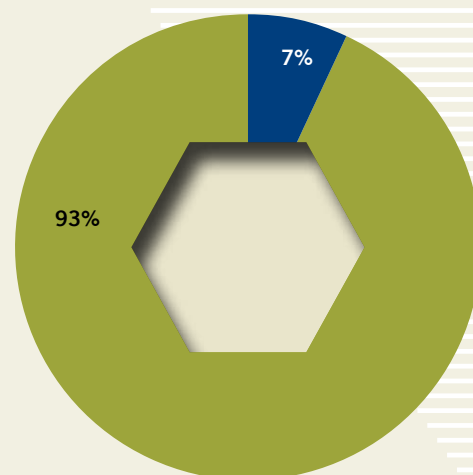
Income Distributed Company - 2019



Sales Group - 2019



Sales Company - 2019







6

Necsa Divisions and Key Subsidiaries

GROUP FUNCTIONS

COMPANY SECRETARY

During the 2018/19 fiscal year, Company Secretariat services were provided by Fulufhulani Corporate Governance and Legal Advisory (Pty) Ltd. Functions that were performed included preparing the annual Board schedule of meetings, timeous distribution of correspondence, record keeping, preparing resolutions for meetings, as well as preparing draft Board and Board Committee minutes. The returns required by the Companies Act were completed and lodged on time.

LEGAL SERVICES

The Necsa Legal Services department is responsible for rendering legal advisory services with respect to contracting and statutory compliance issues, while liaising with external parties as required. In addition, the department manages Necsa's litigation matters and submits quarterly litigation reports.

- Systems and Compliance Audit;
- Corporate Governance and Ethics Related Audit;
- Risk Based Performance Audit;
- Predetermined Objectives Audit;
- Information Technology Audit; and
- Ad-Hoc Audits and Special Investigations.

INTERNAL AUDIT

As part of Necsa's internal control function, Internal Audit evaluates the effectiveness of the Necsa Group's Risk Management Process and internal control systems, including financial internal controls, governance, and ethics related processes. Assurance and consulting services regarding these matters are provided to the Board Audit and Risk Committee.

The key activities of Internal Audit include the continuous evaluation of risks associated with the integrity of financial and operational information, resource utilisation, asset management as well as compliance with legal requirements. In addition, consultation services are provided to the Necsa Group for improving performance and applying Corporate Governance best practices.

Planned and Ad-Hoc audit projects are carried out in accordance with both an Annual Plan and a Three Year Rolling Plan approved by the Audit and Risk Committees. A risk based approach to audit projects is followed and the following audit focus areas are included with the results reported to the Audit and Risk Committees on a quarterly basis:

STRATEGY AND PERFORMANCE

The Strategy and Performance department is responsible for the implementation of a coherent strategy to achieve the Necsa Group's business, social, and environmental objectives. Performance is evaluated against predetermined objectives and key indicators in accordance with the compact between the Minister of Energy and Necsa.

The department supports the Necsa Group in the following areas:

- Integrated business planning and performance monitoring;
- Driving the achievement of strategic and operational objectives;
- Management of Risk and Compliance;
- Organisational competency in Project Management;
- Organisational competency for Quality;
- Occupational Health and Safety;
- Prefeasibility studies on nuclear fuel facilities; and



- Ad hoc matters assigned by the CEO.

The Strategic Planning and Performance Management section is responsible for business planning and reporting performance in terms of predetermined goals and objectives, as reflected under “Performance Information by Programme”. All required performance reports were prepared and submitted to the Necsa Board and the Department of Energy.

The Risk and Compliance unit maintains the strategic risk register, based on departmental and divisional risk registers, and presents it to the Audit and Risk Committee. More information on the role of risk management is incorporated under the corporate governance section.

INFORMATION TECHNOLOGY

The Information Technology function at Necsa is provided by the Office of the CIO through Systems and Information Management. The IT function briefly provides the following services to Necsa as well as its subsidiaries, to a lesser extent, Pelchem and NTP:

- Enablement of business objectives through the use of ICT;
- Strategic business improvement initiatives;
- The development and maintenance of software applications;
- The implementation and maintenance of enterprise-wide systems and infrastructure such as e-Mail and Internet;
- The provision of telecommunication services including landline and cellular communications and services;

Information Technology Performance

The following availability, capacity, and problem resolution targets were achieved for the reporting period:

Metric Measured	Description	Score Achieved	Target
Average system availability	This metric measures the availability of applications and the supporting hardware and networking devices	99.95%	99.99%
Average storage capacity	This metric measures the availability of space on the Necsa storage area network	49.95%	<75%
Average turn around percentage	This metric measures the percentage of problems resolved within a specified period	90.50%	

- The provision of support services for any problems/faults on any IT issues;
- IT Management and Governance; and
- Information Security;

IT Governance

The Information Technology and Information Security Steering Committee exercised its oversight role and deliberated on IT Governance as well as compliance to the King III code of governance.

The Auditor General conducted the annual audit on General Computer Controls. There were no repeat findings.

A total of eight IT Disaster Recovery tests were conducted (on the on-site and off-site Disaster Recover Sites) to assess IT’s readiness to manage any IT related disasters and outages. The tests are used to highlight problem areas that are corrected as they get reported.

IT Projects

The following IT projects were undertaken in the current reporting year and the status is as follows:

- Access Control: Wired and Wireless network access control solution was implemented in line with Necsa’s information security requirements to enhance network access security and compliance.
- Review of IT Governance Framework in accordance with the Corporate Governance of ICT Policy Framework (CGICTPF).

Knowledge Management

The Knowledge Management (KM) function at Necsa is provided by the Office of the Chief Information Officer (CIO). Its primary purpose is to ensure that knowledge is managed through the processes of knowledge generation, storage, transfer, and application in a way that seeks to achieve the organization's objectives. The KM function includes the Necsa Library Services as well as Document Management and Archiving. The KM function works in partnership with other stakeholders such as the Human Resources department and line management.

The Necsa Knowledge Management (KM) Steering Committee continued its oversight role to ensure that the Knowledge Management objectives for Necsa are achieved. Satisfactory progress was made in the financial year with the implementation of some of the core KM processes. This specifically included knowledge loss risk assessments on key staff, tacit knowledge capture, and knowledge retention plans.

A total of 57 knowledge loss risk assessments were done against a target of 50 for the reporting period. The response to mitigate against the knowledge loss risk is prioritised based on the knowledge loss risk profile.

CORPORATE COMMUNICATION AND STAKEHOLDER RELATIONS (CCSR)

CCSR's key role is to position the Necsa Group as a reputable organisation regionally, nationally, and internationally through different communication platforms. The department, which reports directly to the Office of the Group Chief Executive Officer, consists of Corporate Communication (Internal and External) Media liaison, as well as the Stakeholder Relations units. CCSR is charged with driving the Necsa Group strategy in media engagement, corporate events management, stakeholder engagements, direct public engagement, and outreach programmes and Corporate Social Investment initiatives.

CCSR provides an advisory function in managing Necsa's reputation and supports Necsa executives with media and stakeholder engagement as and when required. The department is also responsible for developing key messages which are aligned with the correctly identified stakeholders. The Department strives to establish strong stakeholder relations including Necsa employees, surrounding communities, investors, customers, and the media. Derived from the Nuclear Energy Policy of June 2008 (policy principle 14) – "Government shall

create programmes to stimulate public awareness and inform the public about the nuclear energy programme". The department strives for communication excellence, liaison and facilitation by ensuring reputable stakeholder relations to maintain the highest level of customer satisfaction by constantly exceeding expectations, aligned to the organisational goal.

External communication is achieved by means of the Necsa website (www.necsa.co.za), social media, and media briefings, as well as media interviews through broadcast (radio and television), online and print media, exhibitions, conferences, site tours, outreach programmes, external meetings, campaigns, forums, round table discussions, distribution of bulk SMS's, press statements, and publications.



Engagement, Events and Outreach Programmes

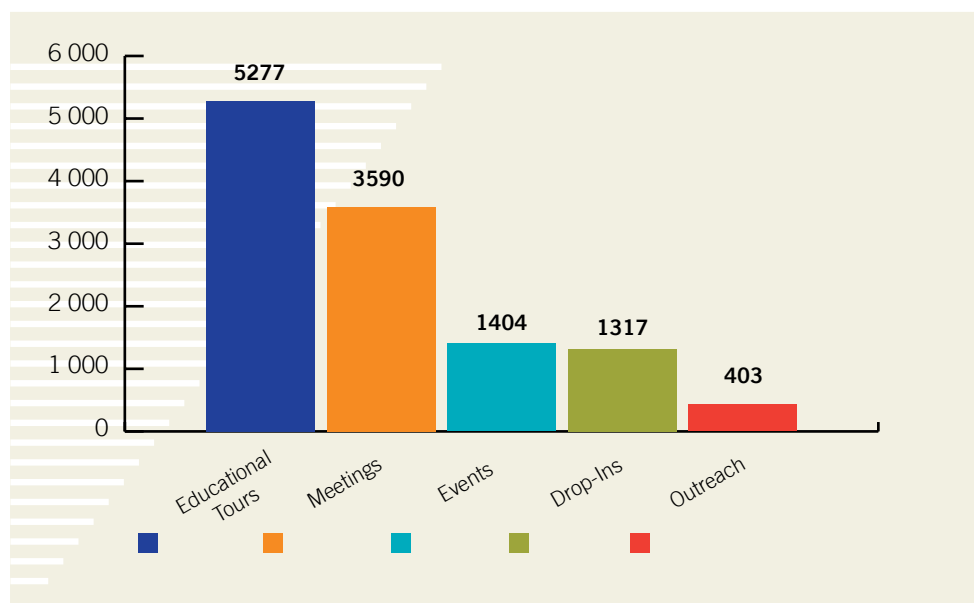
The mandate of Stakeholder Relations (SR) is to promote Necsa's direct strategic engagement with key stakeholders in the nuclear industry and broader formations within South Africa and globally. It is responsible for the Necsa Visitor Centre (NVC) which allows ordinary citizens the opportunity to experience the history of nuclear energy, the role played by energy in society, developments thereof, and what Necsa is all about. This is also a platform used to promote public awareness on nuclear energy.



Learners and educators are amongst the beneficiaries of this exposure. A dedicated team leads guided tours through the NVC and demonstrates live science experiments in which learners participate using household items, thus giving them practical exposure they can apply at school. A number of programmes and activities are hosted at the NVC to improve public perception and to increase the level of understanding of nuclear energy. These programmes include tailor made presentations, workshops, guided tours through the NVC, and science shows, as well as exhibitions.

The NVC is also utilised to host international delegations, including high profiled guests from government, business, and various members of the South African public who engage with Necsa on various business aspects. The NVC is operational from Tuesday until Saturday and closed on Public Holidays. During the last financial year, 12 018 people were interacted with through visits to the NVC, site tours, exhibitions, and outreach programmes.

Bar graph representing different events:



Stakeholder Relations also coordinates strategic events management for internal Necsa events, and also renders inclusive support to the various division/business units/subsidiaries. There were 8 events hosted in the previous financial year.



The key priority of Stakeholder Relations is to forge meaningful relations with key stakeholders within business, government, civil society, labour, and entities within nuclear industries. The department embarked on 22 direct engagements with various sectors, primarily including learners specializing in Mathematics and Science.

Stakeholder Relations promotes Necsa capabilities and profile through strategic exhibitions. This promotes direct interaction with the public and key stakeholders within the nuclear industry, amongst others. There were 13 exhibitions held, including two held in Botswana and one during the IAEA General Conference in Vienna, Austria.



PUBLIC SAFETY INFORMATION FORUM (PSIF)

According to the Department of Minerals and Energy Regulation No 26112 as promulgated in the Government Gazette of 12th March 2004, The **Pelindaba Public Safety Information Forum (PSIF)** was established by Necsa as part of the National Nuclear Regulatory Act No.47 of 1999 as a holder of a nuclear license. It is required that such meetings are held on a quarterly basis with the members of the community that live within a radius of 5km from the nuclear reactor, but Necsa extends invitations to neighbouring residents, such as Atteridgeville that is 15 km away.

The Chairperson and Deputy Chairperson are independently appointed by the NNR, with Necsa as license holder providing the secretariat for the meeting. The main objective of this forum is to facilitate interaction with community members and keep stakeholders informed on safety matters. These meetings were scheduled every quarter on Saturday mornings at the Necsa Visitor Centre, Meerhof School (Hartbeespoort) and municipal offices in Atteridgeville in terms of the above regulation. Meetings are advertised in two local newspapers, Tshwane Sun and Kormorant, as well as on social media. Positive growth in the numbers of attendees continued in the past year.

The PSIF meetings were held as follows in the past financial year:

- 9 June 2018;
- 4 August 2018;
- 10 November 2018; and
- 2 March 2019.

Vaalputs Public Safety Information Forum (PSIF)

The Vaalputs PSIF is still active and attended by members of Necsa on a quarterly basis. These meetings serve as information sessions where attendees receive information regarding the nuclear industry, with a strong focus on the safety aspects. This valuable information is shared with the communities during their monthly meetings.



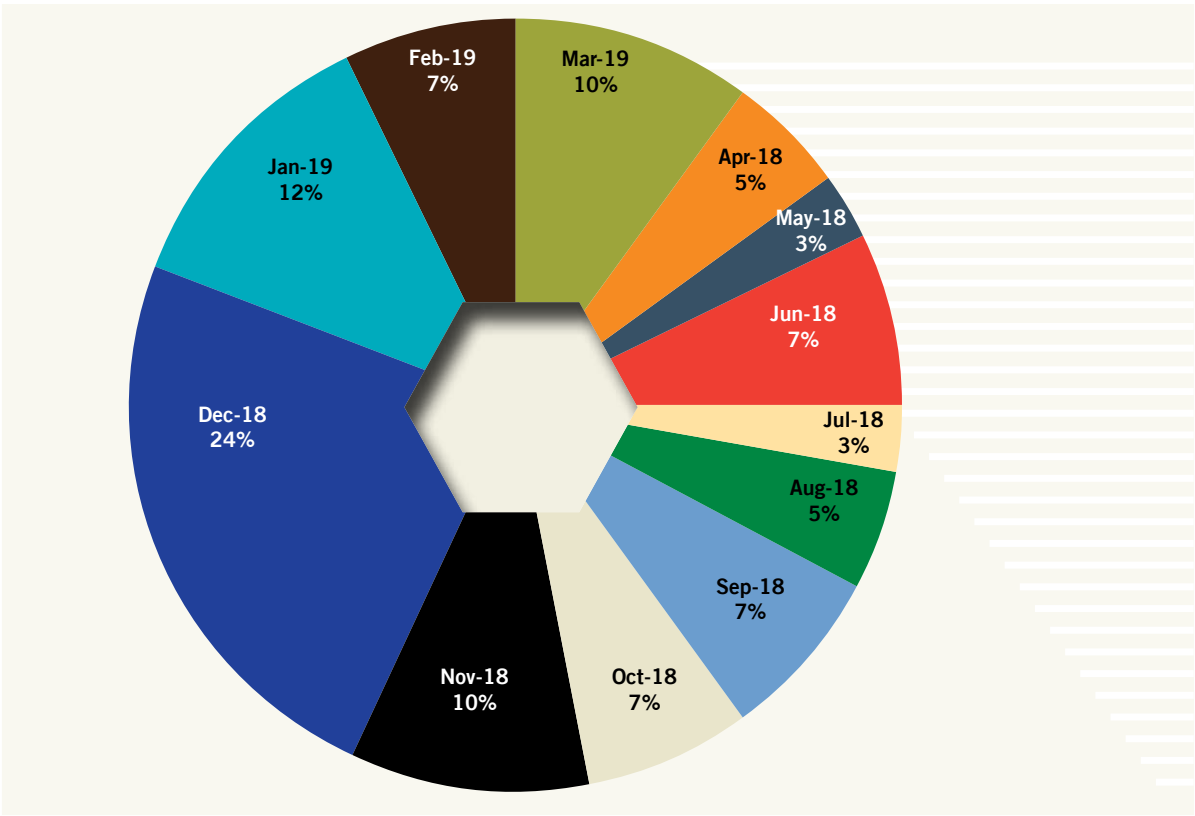


Necsa expanded its media reach by engaging with different stakeholders using various social media platforms. This involved placing critical key messages, sharing of important milestones and engaging the public on key topical scientific issues. This is important in realising the objectives of demystification of the nuclear industry and promoting mathematics and science as subjects of choice. Necsa has seen growth in statistics of social media engagement as follows:

Website visits	Facebook followers	Twitter followers	LinkedIn followers
89 224	3045	1024	3856

The following pie graph represents media publications and broadcasts.

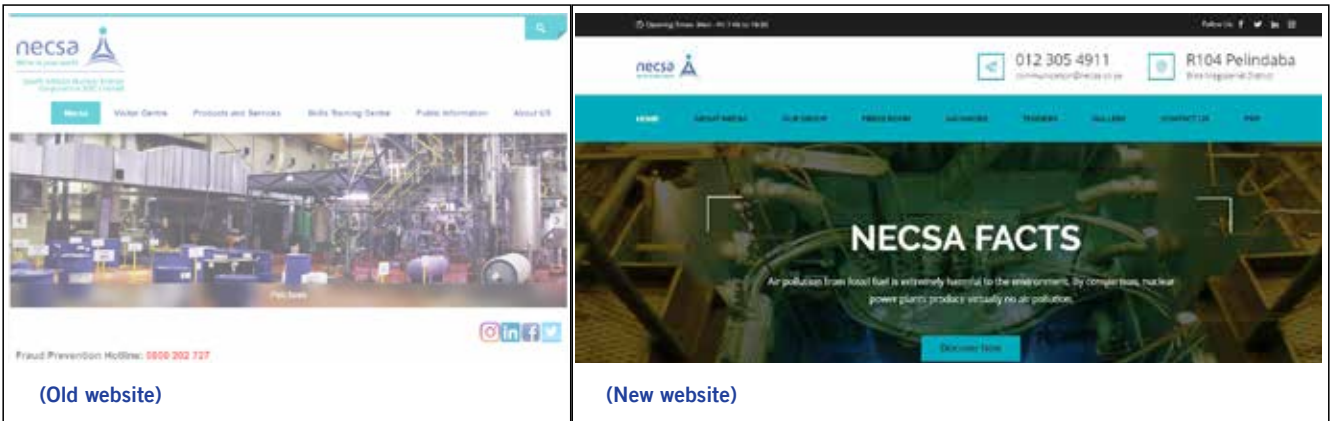
Media Interviews, Statements and Enquiries



NECSA WEBSITE

A website overhaul was undertaken in the previous financial year. The project began from the last week of July 2018 to the launch which was mid-December 2018; the domain of this website is <http://www.necsa.co.za/>. The aim of the website overhaul was to improve the look and feel, as well as the user experience and the content of the site.

Screenshots of the old and new websites are illustrated below:



CHIEF TECHNOLOGY OFFICE

SAFARI-1

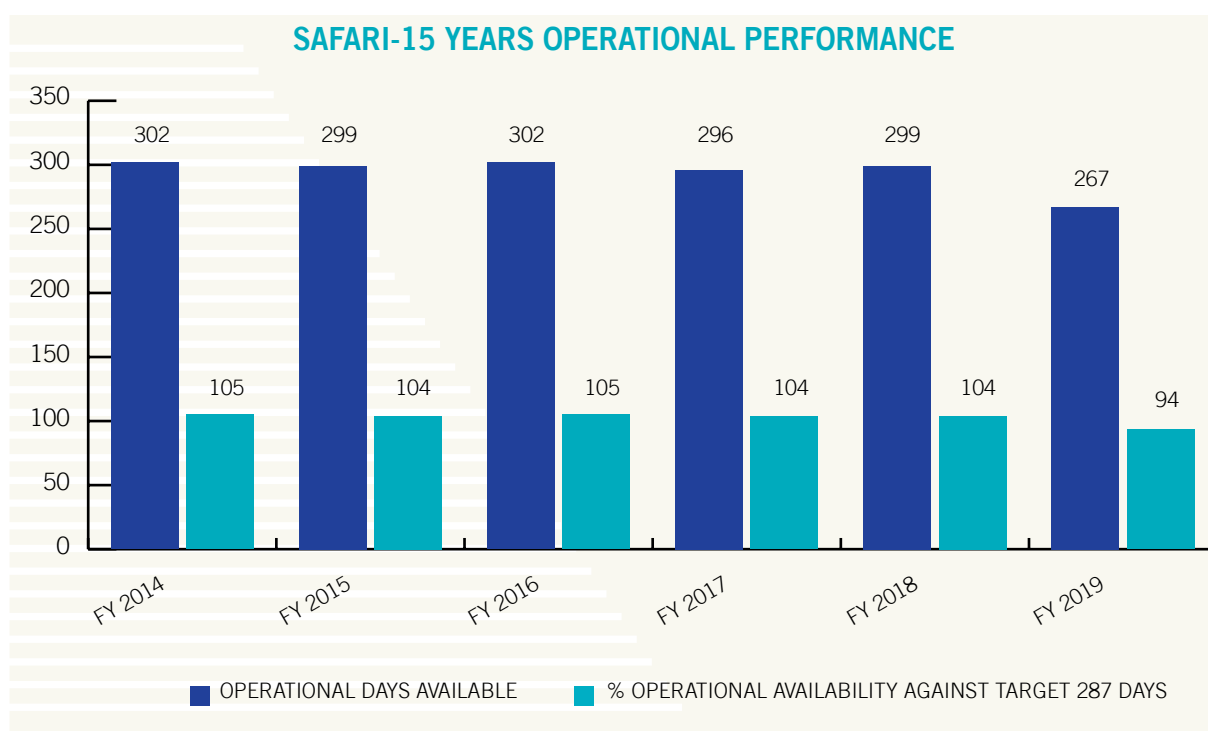
The SAFARI-1 research reactor is one of Necsa's key nuclear facility. Its main application is the commercial production of radioisotopes and rendering of irradiation services. SAFARI-1 provides the basis for Necsa's radioisotope business through its subsidiary NTP Radioisotopes SOC Ltd and other commercial products, as well as the neutron transmutation doping of silicon. Neutron beam lines and other irradiation positions are also used by the Research and Technology Development Unit for research and training. The provision of special services are also supplied through neutron diffraction, neutron radiography, and neutron activation analysis facilities.

The SAFARI-1 research reactor performed well throughout the financial year under report (2018/19) and continued with its record of safe and efficient service to users and public since its first criticality in March 1965.

Operational Schedule

The reactor operational availability was 267 days against the target of 287 days, which represents an operational availability utilisation level of 94% of planned operation during 2018/19 at an average reactor power of 17.40 MW.

The reactor engineering support related to core and fuel management and reactor safety has proceeded well during this year.



Reactor Maintenance and Refurbishment

The ageing management programme progressed slower than planned and this is due to a lack of resources, a lack of project management infrastructure and systems, as well as the long regulatory process for approval of technical submissions before implementation can commence. The plant health assessment project, which will also support the justification for operation beyond 2021, is also underway and progressing very well and is scheduled to be completed by December 2019. The Facility Engineering team is currently working on this project and the associated documents for submission to the regulator. The refurbishment maintenance project of the ventilation systems is proceeding well.

All maintenance programme requirements were completed.

Technical Collaboration

Technical collaboration between SAFARI-1, HFR (NRG-Petten, The Netherlands), and the OPAL reactor (ANSTO, Australia) continued during the year with assistance provided between the three reactors, with regard to operational and safety matters to ensure operational safety and continuous operation of the reactor beyond 2021.

Quality Safety and Environmental Management

The SAFARI-1 research reactor received certification to the new standards for ISO 9001: 2015 and ISO 14001: 2015 and also maintained its occupational health and safety OHSAS 18001 certification. The SAFARI-1 safety indicators showed a total injury rate and disabling injury incidence rate of zero which has so far been maintained for more than a year. SAFARI-1 also developed a safety culture programme which has been implemented and continuously assessed for its effectiveness.

ANALYTICAL AND CALIBRATION SERVICES

Analytical and Calibration Services (ACS) operates Necsa Laboratories providing Analytical, Calibration, Nuclear Forensics and Radiation Protection Consultancy services to internal and external customers. ACS' main function is to provide third party quality assurance with respect to products produced for markets of interest as well as

verification of compliance to regulatory requirements on behalf of its customers. ACS is running four state of the art laboratories, namely (1) Radio Analysis Laboratories (RA), (2) Pelindaba Analytical Laboratories (PAL), (3) Calibration Laboratories (CAL), and (4) Nuclear Forensics Laboratories (NFL) using proven technologies and experienced scientists and technicians.



This consists of the following major categories:

- Measurement of natural and man-made radionuclides using laboratory techniques based on the emission of ionising radiation (alpha and beta particles and gamma-rays), neutron activation and radiochemistry.
- Analysis of the chemistry of materials using instrumentation techniques such as ICP-OES and ICP-MS for elemental, trace and ultra-trace analysis, XRF for elemental analysis, GC and GC-MS for analysis of gas and organics.
- Calibration and metrology of radiation protection monitoring instruments and equipment as well as the provision of radiation protection services which include (amongst other things) conduct of radiation surveys, site clearances, inspections, and sampling.
- Supporting law enforcement agencies with criminal investigations involving nuclear materials found outside of regulatory control; the temporary storage of police nuclear material evidence; the building of national nuclear forensics database library at Necsa; and the regional and the international cooperation and collaborations aimed to develop



and optimize human capabilities and infrastructure for nuclear security.

HIGHLIGHTS

Nuclear Forensic Programme

NFL participated in the international collaboration with the International Atomic Energy Agency (IAEA), USA National Laboratories (Lawrence Livermore National Laboratory, Los Alamos National Laboratory & Argon National Laboratory), and the European Commission's Joint Research Centre (JRC) Institute of Transuranium chemistry (ITU), and the International Technical Working Group (ITWG) experts in nuclear forensics in the development and validation of techniques for forensic analysis.

The IAEA and/or USA DOE (National Nuclear Security Administration) funded the participation of NFL scientists and technicians in the following events:

- The US DOE training workshop in nuclear forensic application of gamma-ray spectrometry held in Los Alamos National Laboratory in the USA.
- NFL technicians' specialists training in nuclear forensics methodologies for member states with/developing nuclear forensics capabilities in Budapest, Hungary.
- NFL participation (alongside key national nuclear organizations) in the Galaxy Serpent version 3 (GSv3) desktop exercise aimed in assisting nuclear countries to fast track the building and testing of national database libraries for the fingerprinting of nuclear materials origins.
- NFL scientists attendance at the ITWG Global Initiative to Combat Nuclear Terrorism (GICNT) annual nuclear forensics expert's consultancy meeting on countering illicit nuclear trafficking hosted by the SPIEZ Laboratory in Switzerland.

NFP also secured an NRF/DST development grant for the nuclear forensics capacity building activities alongside Japan Atomic Energy Agency (JAEA) and the US DOE National Laboratories (Lawrence Livermore and Los Alamos). Funds of the Japan Science Promotion Society (JSPS)/NRF grant funded project aimed at the building of a prototype forensic database library and the validation of key forensic analysis methods has been

used for the part funding of a Headspace Auto sampler for an existing GC-MS system.

The Nuclear Forensics laboratory played an active role, alongside Safeguards management services, in the identification and forensic characterization of a wide range of historic uranium-oxide samples received from the department of Energy (DOE).

Accreditation

Three out of four laboratories are SANAS accredited in terms of ISO/IEC 17025 requirements and a process to accredit the remaining lab is under way.

PAL is accredited for trace elements and physico-chemical parameters in a wide variety of matrix samples including but not limited to drinking, borehole, environmental and sewage effluent water as well as gases. The laboratory is in the process of extending its scope of accreditation to include Organics. The annual SANAS assessment was conducted in quarter four and accreditation status was retained with additional four (4) test methods.

RA is accredited for the wide range of radio-analytical methods in current use with the exception of methods for neutron activation and actinides analysis. No additional methods were added to the scope of accreditation during this FY. The SANAS assessment of RA based on the transition to the new ISO/IEC 17025:2017 standard was conducted on the 27th and 28th February 2019. Six (6) Technical non-conformances and thirteen (13) Management System non-conformances were raised. The reason for the high number of non-conformances is that the standard was promulgated in December 2018 giving the laboratory limited time to align with the requirements of the new standard.

The list of specific accredited methods can be viewed on the SANAS website directory of accredited laboratories (testing lab numbers: T0111, T0168 and calibration lab number: 1203). ACS increased the SANAS scope of Technical Signatories from fifteen (15) to twenty two (22) by adding two (2) new Technical Signatories and expanding the scope of five (5) existing Technical Signatories.



Proficiency Test Scheme

The laboratories participated in various annual international and national proficiency test schemes of which the results thereof are summarised in Table 1.

Table 1: Proficiency Test Scheme % compliance of results

Laboratory	Proficiency Scheme	2018/ 2019	2017/ 2018	Status
RadioAnalysis Laboratories	CTBTO Proficiency Test Exercise	100%	*	
	IAEA-ALMERA Proficiency Test on the Determination of Radionuclides	77%	73%	↑
	US Department of Energy's IARMA	84%	72%	↑
	Procorad Radio-toxicological inter-comparison	74%	76%	↓
Pelindaba Analytical Laboratories	SABS Group 1 analysis of heavy metals in water	100%	100%	↔
	SABS Group 2 analysis of nutrients in water	100%	100%	↔
	SABS Group 3 analysis of major constituents in water	86%	67%	↑
Nuclear Forensics Laboratory	SABS Group 1: uranium analysis	70%	67%	↑
* No official participation due to instrument breakdown				

The Nuclear Forensic Laboratory (NFL) and Calibration Laboratory (CAL) participate in inter-laboratory comparison studies. NFL participated in the ITWG organized 6th inter-laboratory comparative material exercise (CMX-6) aimed at identifying and prioritizing forensic techniques. The submitted results for all the exercise injects were in good agreement with the reference values provided by the exercise coordinators (i.e. laboratory observations and analysis results were found to be in good agreement with the reference values).

In the case of CAL, the inter-laboratory comparison study was done with SABS and NIMSA. The results were in good agreement with the reference standards as the normalized error values were within the acceptable limits.

The US Department of Energy's MAPEP discontinued the participation of member states outside the United States hence its replacement with IAMA in Table 1 above.



Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO)

South Africa is a signatory to the Comprehensive nuclear Test-Ban Treaty. Accordingly, government has conferred the mandate to Necsa to perform and handle all CTBTO matters that relate to radiological or nuclear activities.

CTBTO and Necsa undertook a joint project to establish a laboratory (Radionuclide Laboratory RL-14) which includes amongst other things the implementation of a quality management system. ACS is responsible for the establishment, operation and maintenance of the CTBTO Radionuclide Laboratory RL-14 to perform analysis on International Monitoring Systems (IMS) samples. The certification visit by the CTBTO took place at the Necsa ZAL14 laboratory on 11 to 15 March 2019 for assessment of compliance to the CTBT/PTS/ONF.96 standard. This project is done in collaboration with the Department of Trade and Industry (DTI) which is responsible for the national non-proliferation obligations. A total of forty two (42) non-conformances were recorded which should be closed by 31 July 2019. A team of scientists and technicians were put together to ensure successful completion of the findings referred to above.

KEY-METRICS

Agreements signed

Activities of the bilateral agreement with the USA DOE laboratories signed during the previous year were carried out as planned for the year under review. The scope thereof included provision of specialized forensic analysis training of scientists, acquisition of core equipment, and development and validation of laboratory forensic analysis methods.

Growth Rate

In the previous reporting period the Agriculture market segment was dominant but now has been overtaken by the Consulting Companies market segments. A positive growth was registered in the Government sectors with a significant increase recorded again in the Consulting sector. Contrary to this, a decline in growth of customers was registered in the remaining sectors with a significant decline in the Agriculture sector. The number of samples received has declined from 63 376 to 59 744.

Table 2: Organic growth

Type of sector	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total year 2018-19	Total year 2017-18
Number of Customers per Market Segment						
Mining and Mineral	51	65	47	52	215	231
Manufacturing	33	34	33	34	134	150
Government	15	17	28	18	78	77
Health	12	9	8	12	41	51
Agriculture	64	57	23	25	169	219
Consulting	65	49	52	53	219	195
Other Laboratories	1	0	0	0	1	3
Educational Institution	2	1	0	1	4	10
Grand Total	243	232	191	195	861	936
Total number of Samples Received						
Grand Total	14 743	15 796	14 538	14 667	59 744	63 376

Productivity

Productivity has slightly increased with respect to number of samples processed in F2018-19 compared to F2017-18.

Table 3: Productivity Outlook

Benchmark	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total year 2018-19	Total year 2017-18
Samples Processed						
Target	21 773	20 058	20 366	25 677	88 176	104 520
Actual	20 298	25 959	20 620	22 312	89 189	79 888
Methods Developed ,Validated and Quality Procedures						
Target	33	33	34	21	121	112
Actual	23	43	22	38	126	88

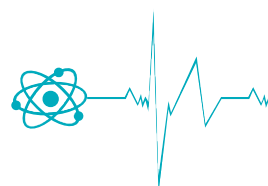
Projects

ACS has embarked on a process of increasing capacity of Necsa laboratories with the view to accommodate more samples and process them within a shorter turnaround time. Increase in capacity is also aimed at ensuring profitability of these laboratories and also achieve required growth. Consequently, nine (9) key projects were identified and executed of which one (1) project was completed during the reporting period.

Following the external consultant's review of the ACS projects it was recommended that a phased approach be introduced for development projects. The revision of the all the project timeframes against the consultant's recommendation revealed that these projects are medium to long term projects.

Table 4: Improvement Projects

Laboratory	Project Name	Start Date	Target Date	Rev Date	Status
Calibration Laboratory	Radon Instrument Calibration Laboratory in B-C5	Mar-16	Jul-18	Mar-21	In Progress
	Relocation from V-X1 to B-C5	Apr-15	Aug-17	Dec-19	In Progress
	X-Ray Inspection Body	Jun-17	Aug-18	Nov-20	In Progress
	The design of a radon gas monitoring instrument	Nov-17	Mar-19	Mar-21	In Progress
Nuclear Forensic Laboratories	Development, Validation and Accreditation of ICP MS test method for analysis of U isotopes in water (NORM) and for isotopic abundances	Aug-16	Jul-18	Mar-20	In Progress
	Building and Application of a Nuclear Forensics Database Library of Uranium Ore Concentrate (UOC) Materials	May-17	Jun-19	Nov-20	In Progress
Pelindaba Analytical Laboratories	Method Development, Validation and Accreditation of Determinands for Drinking Water Standard SANS 241	Sep-15	Dec-17	Dec-19	In Progress



Laboratory	Project Name	Start Date	Target Date	Rev Date	Status
RadioAnalysis Laboratories	Certification of the RA Laboratory in preparation of analysis of CTBTO samples	Sep-15	Dec-17	Dec-19	In Progress
ACS	Procure services of a competent service provider to assist with ACS Business cases for new services	Jun-17	Nov-17		Completed

NUCLEAR LIABILITIES MANAGEMENT (NLM)

Decommissioning Services

Decommissioning activities during the financial year focused mainly on the following projects:

- **Phase 2 decommissioning of Area 14 oil basement:** Cutting of the oil pipes in smaller sections progressed well as scheduled and the project target set for 2018/19 Financial Year was reached.
- **The de-heeling of UF₆ cylinders in Area 27:** This project is progressing slowly due to the slow cylinder washing process as well as the challenges experienced with the damaged transport trailer.
- **Phase 2 decommissioning of the Conversion Facility:** Pre-decommissioning activities are currently awaiting NNR approval of the Hazard Assessment and Decommissioning Strategy with regard to the collection of all loose material. The project is currently placed on the NNR priority list.
- **Care and Maintenance:** Various facilities, including BEVA Evaporation pans, (previously radiologically contaminated) on the Necsa site are under Care and Maintenance. These facilities (all under NNR authorization) are inspected regularly and monitored (radiologically) on a routine basis.
- **Liability Assessment:** Liabilities assessments for the past strategic historical facilities are currently underway as per the approved schedule.
- **Area 16 Safety Assessment Report** has been approved by the NNR. The outstanding safety requirements are being finalised in preparation for the transfer of UF₆ cylinders from Area 21 to Area 16 cylinder storage facility.

Decontamination Services

- The Decontamination Facility consists of a Wet Decontamination Section where chemical or metallurgical decontamination techniques are used to recover nuclear materials, and Dry Decontamination where nuclear materials are physically and mechanically removed from contaminated materials to recover nuclear materials.
- A total of 168 batches were processed and 100% of the material that was presented for decontamination was cleared from regulatory control.



Management of Nuclear Waste

Solid waste management

Nuclear waste from various points of origin was collected and safely stored at Necsa during the review period as follows:

Type	Origin	Storage area	No. received 2018/19	Total at 31 March 2019
Drums	Facilities on Necsa site and external clients	Pelstore and Area 21	1774 (received) 30 concrete drums (5 shipments) (Transport to and disposed of at Vaalputs)	70252 (received) 6130 (Transport to and disposed of at Vaalputs)
Spent fuel elements	SAFARI-1 storage pool	Thabana Pipe Store	21	978
Spent sealed radioactive sources	Clients throughout SA, specifically the health care sector	Area-24 Source Store	480	10719
Smoke detectors	Clients throughout SA	Area-24 Source Store	845	29479

A total of **30** concrete waste packages have been transported and disposed of at Vaalputs. The cumulative total number of waste packages transported and disposed of at Vaalputs was **6130** as at 31 March 2019. Area 24 Disused Source Storage Facility is operational; sources are received around the country stored, characterized and conditioned on a continuous basis. The process of conditioning radioactive sources started in November 2015. Since November 2017, a total number of 1465 Disused Sealed Radioactive Sources were characterized and conditioned. Predisposal Operations has generated a total of R 10 596 019 for the financial year 2018/2019, for the sources which were collected and delivered in Area 24 Disused Source Storage facility.

No Disused Sealed Radioactive Sources were repatriated for the reporting Financial Year. Waste characterization is conducted on a continuous basis for safeguards (IAEA) and final disposal purposes. A total of **2024** and **1877** drums have been measured using the IQ3 scanner and the BNFL Segmented Drum Scanner respectively. The contents of **2260** drums have been physically verified and registered on the Waste Tracking System.

Liquid Effluent Management

LEMS continued to receive, treat, and dispose of all industrial, low, and medium activity radioactive effluent generated on the Pelindaba site. The facility operates under strict regulation and authorization from the relevant authorities. A comprehensive laundry service for work wear and personal protective equipment (PPE) is also provided to Pelindaba facilities as well as other ad hoc service to the NNR.

LEMS provided uninterrupted services to generators and all effluent releases were authorized based on regulatory limits. In addition to budgetary constraints and unfilled critical vacancies, ageing facilities requiring extensive maintenance remains a growing concern.



Vaalputs Waste Management



Liquid Effluent Indicators for 2018/19

Key Performance Area	Target	Actual
Limit Environmental Impact	Annual dose $\leq$ 150 μ Sv	2.710 μ Sv
All Releases to Crocodile River Authorized and within Regulatory Requirements	100% Releases Authorized	100%
Limit Releases to Crocodile River	Annual Releases $\leq$ 250,000 m ³	61,288 m ³
Zero Downtime to Customers	100% Plant Availability	100% (365 days)

Due to the ageing of the LEMS infrastructure and equipment that has degraded over the years, challenges were experienced with the MA effluent facility. A 6-week maintenance shutdown was planned for May 2018. The purpose of the shutdown was to dismantle, inspect and re-assemble the Medium Active Low Salt evaporator compressor and gearbox, which is the most critical component of the MA effluent treatment facility.

The shutdown was initiated by a suspected leak on the compressor labyrinth seals after water was detected in the lubricating oil during routine inspection. The planned shutdown was communicated to the LEMS MA clients and scheduled in accordance with their production planning. An external service provider was appointed to inspect and perform nondestructive testing of the components and internal parts of the compressor and gearbox. During the inspection, it was noted that there was extensive wear and tear on the evaporator components which, if not attended to during the shutdown, could result in the potential of unforeseen further damage, breakdown and resulting in unavailability of the MA evaporator system for an extended period. The necessary repairs and maintenance were conducted in September and the operations resumed on the 1 October 2018.

Nuclear Waste Projects

The Volume Reduction Facility is a newly built nuclear facility aimed at reducing nuclear liability at NECSA by a process of compacting waste drums thereby reducing its volume and placing a series of four (4) to five (5) of these compacted drums into a single uncompressed drum prior to shipment for off-site disposal.

Construction of the facility has been completed. Cold commissioning was successfully completed and accepted by the NNR. NNR authorisation to perform hot commissioning was granted on 23 June 2017. Hot commissioning was performed according to the requirements but was stopped due to excess liquid in the drums compacted. Hot commissioning resumed during May 2018 but was again stopped due to liquid in a waste drum. All waste drums needed to complete hot commissioning have been inspected to verify that they are free of liquid. A request to continue hot commissioning in January 2019 was submitted to the NNR on 14 December 2018. A population of 130 “safe” waste drums was verified and set aside for hot commissioning so that this activity can continue in parallel with the identification of the verification technology.

Due to the detection of the presence of liquid in these waste drums, the facility is required to comply with its Waste Acceptance Requirements (WAR) and licensing conditions, but as it was detected during the hot commissioning and following communication from the NNR to ensure compliance, the project scope had to be extended to address this requirement. Two additional projects were registered (SHEQ-INS-0800), one to obtain an X-ray system, which will be used to detect any liquid in waste drums, and the second project to establish a waste segregation and repacking facility, in which the X-ray identified liquid can be removed from the waste drums. A Necsa team visited Andra (France) and Enresa (Spain) to study and observe waste drum verification technologies in operation prior to the procurement and commissioning of X-ray technology for verification of the waste drums contents.

The construction and installation of the smelter facility is complete. The cold commissioning and then hot commissioning of the facility will follow. As part of Necsa’s waste management strategy a projects construct and operate a smelting facility in Area 26 on the Pelindaba East site was initiated. The aim of the Smelter is to decontaminate metals and to reduce the volumes by clearing the metals for reuse and recycle purposes. Melting of uranium contaminated and potentially contaminated metals is currently accepted as the best practicable means for the management of this category of waste.

Nuclear Waste Disposal

Necsa continued to manage Vaalputs and will continue to do so until the NRWDI is in a position to establish the Nuclear Installation License.



IAEA/AFRA Related Activities

SHARS Mobile Hot Cell

No Mobile Hot Cell (MHC) operations were undertaken for this period. A contract between Necsa and the IAEA to perform the MHC operations has not been concluded yet.

External Projects

KNPS

Due to the ageing and corrosion on the Koeberg PTR tanks (Units 1 and 2), Eskom initiated a project for the replacement of these tanks. The tanks are used to store the reactor pool water during reactor operation and are about 12m in diameter, 18m high and weigh about 80 tons. A consortium between Lesedi and Group Five was contracted for the removal of the old tanks, construction, installation and commissioning of the new tanks. Necsa through NLM was subcontracted to perform the radiological decommissioning activities related to this project.

The NLM team commenced their work on the 2 PTR tank after NNR approval was obtained on 11 October 2018. The NLM night shift team could then start with the planned decommissioning activities. Decommissioning activities continued on a 24 hour basis (2 shifts), but were several times interrupted due to high winds, which did not allow the team to perform work from the man-cage on pipes situated in elevated positions. However, during the very early hours of the 18 October 2018 the NLM team successfully completed the last cuts and the rigging team could start rigging the tank for lifting that evening. Due to technical challenges the tank could not be successfully lifted, however was ultimately successfully removed on Monday 22 October 2018.

A Task order to the amount of R4.4 million was received from Eskom for the work packages related to the characterisation of the Original Steam Generators (OSG) metallic waste. NLM team members are involved in the execution of this project.



RESEARCH AND TECHNOLOGY DEVELOPMENT

The Research and Technology Development Division (R&TD) maintains and grows core skills in order to apply them for niche products and services development in the following fields:

- (a) **Radiation Science**, involving reactor theory and calculations, as well as applications of radiation beams for pure and applied research;
- (b) **Applied Chemistry** in nuclear and radiation related fields, and;
- (c) **Radiochemistry** research for medical isotope and radiopharmaceutical development.

The R&TD output, based on these core activities and as highlighted in this Annual Report, is targeted towards the following six Strategic Impact Areas as outlined in the Necsa Strategy, namely:

1. Nuclear Reactor Science & Technology;
2. Medical Diagnostics and Therapy;
3. Nuclear Instrumentation and diagnostics;
4. Clean Energy;
5. Material Beneficiation; and
6. Waste R&TD.

In addition, important contributions are made to the National System of Innovation (NSI) through research support and contract research. R&TD's role in the NSI is in support of a knowledge economy with specific emphasis on the nuclear and radiation fields to help sustain research and technology development in line with NSI expectations.

A systems engineering approach to product development is followed and the core science and technology activities are supported by sound project and program management principles. Operations management supports effective implementation with Safety, Quality, Health, and Environment being of uncompromising essence to R&TD.

Close collaboration with national and international collaborators to benchmark and strengthen own capabilities is sought after and nourished.

RADIATION SCIENCE DEPARTMENT

The purpose of the Radiation Science Department is to establish and maintain:

- Expert, internationally benchmarked and recognised, reactor simulation and calculational capability and to use this to render support towards the Necsa Group's position in the global radioisotopes market.
- A vibrant IAEA recognised Neutron Beam Line Centre of Competence, for the African Region with an extensive and active South African user group from key national research fields.
- Peer recognised core expertise (judged by research outputs) that will make Necsa a partner of choice in reactor and radiation related programs and initiatives.
- Core expertise in radiation S&T, reactor S&T and materials analysis (based on beam line techniques) that can assist with IP generation to provide new nuclear technologies and products that can compete on the international market.
- Internationally competitive research facilities, manned by expert instrument scientists, including upgraded SAFARI-1 Beam Line Facilities, complementary X-ray facilities, and accelerator beam line facilities.
- A user community from within the National System of Innovation that can benefit from the unique beam line research facilities and instrument scientist expertise.
- High level Human Capital through training and research project study support at Necsa facilities.
- Networks and research consortia with other institutions (such as iThemba LABS) and the HEI, with particular emphasis on national alignment of skills to improve synergy and focus on the needs of the nuclear and radiation sciences.



- Participation in technical cooperation and skills exchange programmes of the International Atomic Energy Agency (IAEA) with the objective of becoming a Centre of Competence in neutron beam line research in Africa.

Highlights

Local (NSI) collaborations; networking and capability development

Not only are collaborations with partners from within the National System of Innovation (NSI) important for funding support by the DST/NRF, but they assist with knowledge import into Necsa, as well as with the establishment of national research networks, whilst promoting Necsa's image as a valuable R&D partner. Some key collaboration initiatives for the reporting period are listed below:

Use of Necsa Facilities:

- As part of Necsa's commitment to make nuclear and radiation expertise and facilities available to the NSI, the micro-focus X-ray facility as well as diffraction laboratories equipped with two neutron diffraction and equivalent X-ray diffraction facilities are accessed by students and researchers from within the NSI. Four international and ten South African Universities made use of these facilities for parts of their postgraduate research projects.
- The Necsa Van de Graaff accelerator was made fully operational during this year. Continuous mode beam current of up to 150 μ A has been achieved, and the accelerator is now suitable for direct-beam material damage studies in collaboration with the University of Pretoria. In addition, the Rutherford Backscattering station has been brought to full operational status and a fast neutron radiography facility has been installed on the neutron beam line.
- The P-LABS (Pelindaba Laboratories for Accelerator Based Science) group currently has strong established collaborative links within the NSI with the MeASURe group at University of Cape Town, the ATLAS/CERN collaboration via University of Johannesburg, the implementation of a Necsa multipurpose scatter chamber at iThemba-Labs (WITS) and RBS measurements done with the Physics department at UP. The team also collaborates internationally with the PTB

group in Germany with FNR and accelerator beam optics studies as well as PSI in Switzerland where high sensitive neutron detection experiments are carried out.



Radiation Calculation Support to SAFARI-1 and other Necsa Projects

- SAFARI-1 fuel and core management, in the form of reload safety calculations continued to receive high priority, especially since core management was more challenging than usual because of the uncertainty in NTP operations, leading to uncertainty in core operation and fuel loading. A work-request for the Nuclear Criticality Safety calculations for the long-term storage of SAFARI-1 spent fuel elements as well as NTP solid residue from processed target-plates, were also completed.
- During the year, very important calculations were done by Radiation and Reactor Theory (RRT) in preparation for shipping a large number of LEU spent fuel assemblies off-site to dry storage.

Radiation Science User Facilities at SAFARI-1 Research Reactor

- Apart from its high impact role as commercial producer of medical and industrial radioisotopes, the SAFARI-1 research reactor provides thermal neutron beam lines to specialised beam line instrumentation where material related research is performed that ranges from fundamental investigations to extremely practical applications that can boost new material developments and advanced manufacturing respectively.



- These beam line instruments are unique from a national perspective and underwent ongoing refinement and were available to all researchers within the National System of Innovation (NSI) to promote the establishment of a competitive knowledge economy. The information provided is at a fundamental atomic level and has impact in vast fields within Science and Technology that has direct practical importance. Expert Necsa instrument scientists assist researchers from various fields of research to optimally extract pertinent information.
- The SAFARI-1 beam line facilities comprise two world-class neutron diffraction instruments, i.e.: (1) The Materials Probe for Internal Strain Investigations (MPISI) which is a neutron strain scanning instrument that enables high resolution depth resolves studies within bulk materials and components; (2) The Powder Instrument for Transition in Structure (PITSI) which is equipped with an extensive suite of temperature capabilities that enable in-situ parametric studies of crystallographic and magnetic phases and transitions. As examples of the practical importance, and wide scope of application to industry and South Africa in general, the following applications during the year are mentioned as typical examples: Direct identification of phase transitions in high chromium steels (in conjunction with the Metallurgy Department of the University of Pretoria), characterisation of surface treatments such as laser shock peening to extend the fatigue lifetimes of high-values components (National Laser Centre and Eskom) and WC-Co coatings (DST-NRF Centre of Excellence in Strong Materials, WITS University), verification that materials used in the production of aircraft components have undergone the appropriate pre-conditioning treatment to alleviate complications during machining, etc.
- The diffraction facilities also serve as a leading African centre of expertise with knowledge and expertise shared during official Scientific Visits by topical experts from African research centres, under the auspices of International Atomic Energy Agency, Technical Cooperation Programme.

Contract Research Projects

- A comprehensive project in the Aerospace Industry Support Initiative was completed for Aerosud, focused on the non-destructive investigation of position-resolved tri-axial residual stresses that exist in two large aluminium billets.

- Successful completion of calculations relating to a uranium-down blending study, requested by ANL (Argonne National Laboratories) in the USA.
- Awarding of a contract by Eskom, for the removal and disposal of six old steam generators and two scrapped reactor pressure vessel heads at Koeberg to Necsa, for which Radiation and Reactor Theory perform activation, dose-rate and shield design calculations.
- A comprehensive project which has been completed in collaboration with the Civil Engineering Department of UCT to map the residual stresses in as-manufactured South African steel I-beams, as well as I-beams where up stands have been welded onto one of the webs. This underlines the importance of neutron diffraction in advanced manufacturing.

Capability Development in Radiation Related Materials

We aim to fulfil the important role within the nuclear industry of testing the radiation hardness of nuclear and other related materials used within radioactive environments. To do this, we investigated the effects that different forms of radiation (i.e. neutrons, charged particles, and photons) have on materials. This was done by bombarding the materials with the different radiation forms from the accelerator. These tests serve as a crucial step in material qualification for use within environments with high radiation fields such as nuclear reactors and accelerators. The samples were characterised pre- and post-irradiation to quantify the extent of damage. We also offered accelerator based materials characterisation known as ion beam analysis (IBA) and it includes such techniques as Rutherford Backscattering Spectroscopy (RBS), Nuclear Reaction Analysis (NRA). These techniques enable us to determine the elemental composition and distribution within materials.

Hosting of Workshops; visits and public awareness drives:

- The Radiography and Tomography science group hosted a workshop at Necsa on 17 July 2018 entitled: How Computed Tomography (CT) adds value to the Geosciences. This showcased Necsa's expertise in practical computer tomography application, specifically in the geosciences.

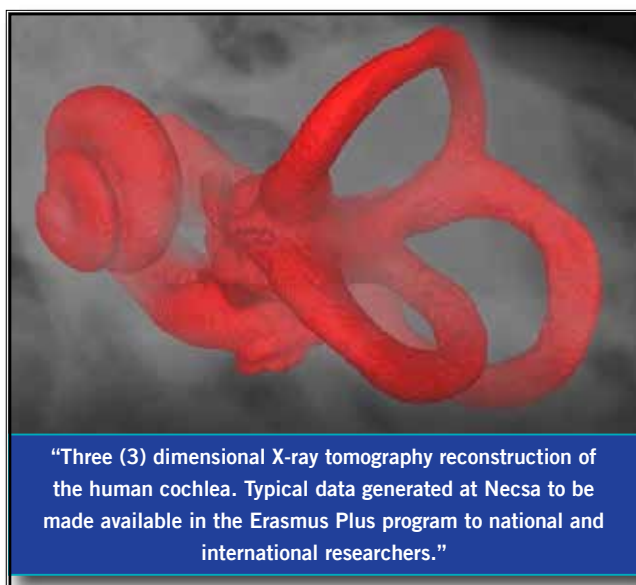


- Eighteen members of the Mineralogical Association of South Africa (MINSA) visited Necsa on 22 Feb 2019 as part of their 40th anniversary. This was complemented with oral presentations by Radiation Science personnel on analytical support existing at Necsa for applied research, illustrated with application examples.
- As part of our out-reach strategy to get promising young people interested in science, Radiation Science scientists made contributions to the National Science Week with talks entitled: "Revealing the Hidden with the Unseen" and "Fingerprints of matter", and scientists also participated as adjudicators for the North Gauteng Senior Science Fair and as conveners at the International Science Fair.

International collaborations

European Scientific Programs:

- The BrightnESS2 application to the European Commission Infrastructure Development project call (for the European Spallation Source) has been successful for the funding period 2018 to 2021. Necsa's neutron beam line scientists will participate in the project. The project aims are to expand the knowledge, use and access of neutron scattering techniques to South African researchers, as well as to collaborate with the development of a quality standard for the neutron strain scanning technique in conjunction with three of the most prominent groups in Europe.



- Necsa is a consortium member of the European Union, Erasmus Plus, program that will fund a data server, to be hosted at the University of Pretoria. Three dimensional tomography data, taken at micro-focus X-ray facility at Necsa, will be uploaded for national and international accessibility for all interested researchers.

Licensing of Necsa's OSCAR commercial code:

Further evidence of Necsa's excellence in the area of radiation science was the development of the OSCAR-5 (Overall System for the Calculation of Reactors, Version 5) system, which was released early in 2019 for client use. It represents a step-change in the development history of the OSCAR system, as it has now moved into a high fidelity, multi-code, multi-physics space, as opposed to a pure neutronic nodal diffusion package. The system was benchmarked against a large multi-reactor benchmark set developed by the IAEA, and descriptions of OSCAR-5 are published at a number of International research reactor conferences.

- The novel developments in OSCAR-5 has already attracted some notable international interest, with 12 countries and 18 nuclear institutions who committed to attend the first OSCAR-5 training workshop held in South Africa in April 2019.
- In this reporting period significant effort went toward the support of existing users of the OSCAR code system at various international institutions, as per license agreements. This culminated in new candidate models for both the Hoger Onderwijs Reactor, at TU-Delft, the Netherlands and the McMaster Nuclear Reactor, at McMaster University, Canada.
- Based on client requests, various extensions and improvements were implemented in the OSCAR system and a new release of the code was made to all clients. These include: update to the molybdenum-99 planning and scheduling capability; redefinition of the power peaking factor and implementation of solver and pre- and post-processors; and updates to the cross-section parameterization codes for representing multiple burnable absorber types in a single model.



Technical Co-operations projects:

- A technical cooperation meeting was held with Dutch NRG (Nuclear Research Group) representatives during an IAEA meeting in which support was provided for the modelling of the new PALLAS reactor design with OSCAR. These developments and experience help to establish a skills base, from which future research reactor design support for a follow-up reactor for SAFARI-1 can be launched.
- The project with INVAP (Investigation Aplicadas) to develop an OSCAR link with CONDOR (Cell Cross Section Lattice Code) has continued and made good progress. The CONDOR code is an internationally renowned reactor physics lattice code and it is broadening the capability and application scope of the Necsa code system.
- The PALLAS reactor has agreed to use OSCAR-5 for independent assessment of the vendor designs proposed for the new reactor. The work will be conducted by NRG (Nuclear Research Group), via a second commercial user license to NRG.
- A visit was conducted by RRT staff during December 2018 to the Reactor Excursion and Leak Analysis Program (RELAP) development team in Barcelona to couple OSCAR to RELAP. The work progressed well and a draft coupled code has been developed. This work represents a landmark achievement and is the culmination of a few years of preparatory work for a power reactor safety analysis capability in OSCAR.

Conferences; visits and collaborative contributions:

- Following the very successful MECA SENS 2017 (Mechanical Stress Evaluation by Neutron and Synchrotron Radiation) conference hosted by Necsa's Diffraction Group, the scientific proceedings of the conference, featuring full manuscripts, has been compiled and published in Materials Research Proceedings, Volume 4 of 2018 under the title: *"Mechanical Stress Evaluation by Neutron and Synchrotron Radiation."* Drs D Marias and AM Venter are the guest editors of this publication.
- Under the auspices of IAEA, the Neutron Diffraction Group hosted two scientists from CNESTEN (National Center for Energy Sciences and Nuclear Techniques) in Morocco, to gain

first-hand input towards the development of new beam-lines at their TRIGA Mark II research reactor. Experts at Necsa were consulted on neutron diffraction instrument simulation, data acquisition and control systems, data analysis, instrument alignment & characterisation, neutron radiography & tomography, and neutron activation analysis.

- Other important national and international collaborative contributions were made by Radiation Science professionals, in that a Necsa expert acted as co-Chair for a track of the 27th International Conference on Nuclear Engineering. More than ten papers and research proposal projects have been reviewed by Radiation Science staff members for leading international research user access facilities such as ANSTO (Australia), as well as NIST (USA).

Recognition

National and international recognition of Necsa's expertise in the application of radiation diagnostics to materials has been re-emphasized by the fact that:

- A Necsa Radiation Science expert has been invited to serve on the board of the DST-NRF Centre of Excellence in Strong Materials and has also served on a six member international panel, which developed an international standard test method for determining residual stresses by neutron diffraction, which has been accepted by ISO/DIN for publication.
- Two Radiation Science scientists have been awarded prizes for the best PhD oral and poster presentations respectively in the Applied Physics Forum at the 2018 Conference of the South African Institute of Physics.
- Radiation Science personnel serve on various international committees, i.e. the International Society for Neutron Radiography, the International Scientific Committee of MECA SENS (MECA SENS: Mechanical Stress Evaluation by Neutron and Synchrotron Radiation), NOBUGS International Advisory Committee (NOBUGS: New Opportunities for Better User Group Software, the International Society for Sample Environment (ISSE) as well as International Advisory Committee, Executive Committee and Strategy and Policy Committee of the African Light Source (AfLS).
- Access to international neutron facilities, based on the merit of the research proposals, have been awarded to two Radiation Science staff members



respectively at the Neutron Imaging Facility of NIST (USA) and the Neutron Strain Facility (Kowari instrument) at ANSTO (Australia).

- Radiation Science personnel serve on various national committees, i.e. the South African Committee of the International Union of Crystallography, chair of SRRIC (Synchrotron Roadmap Implementation Committee), as well as regularly perform ad hoc review tasks for the NRF.
- A Necsa Radiation Science expert has been re-elected (5th time) as Board member of the International Society for Neutron Radiography.

Training, Human Capacity building and Talent Management

Capacity development and talent management important for establishing the knowledge base for applied R&TD activities, which should assist with development of value adding products and services, were given high priority and (some) are listed below:

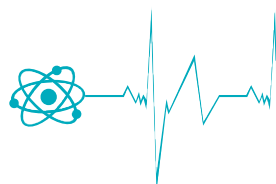
- The Radiation and Reactor Theory Section of the Radiation Science Department remained pro-active in providing support for reactor physics capacity development. A set of lecture notes for a post-graduate reactor physics course at the University of Pretoria to B. Eng. Honours and M. Eng. students in the Mechanical Engineering Department were prepared and presented to the students. This is an effort by several senior RRT members.
- HR capacity building and talent management involved a year average of 10 Radiation Science staff members enrolled for PhD studies and 3 for MSc, while two received PhD degrees and one MSc. degrees was awarded. In addition post graduate support has been provided by Necsa personnel to a year average of 10 external PhD and 13 MSc students performing part of their studies at our radiation research facilities.
- As further indication of a practically focused capacity building program, one scientist attended a FLUKA (particle transport code) training course in Stellenbosch, which will benefit the materials studies to be done in collaboration with Pretoria University. Two more engineers attended a course to establish skills in a printed circuit board computer aided design, which is of importance for instrumentation development for accelerator and beam line equipment, as well as for development

of instrumentation for industrial applications of radiation.

- Participation in national capacity building and pipeline development in nuclear and radiation science were undertaken, as students from the North-West University visited Necsa to do projects as part of the Graduate Diploma in Nuclear Engineering.
- Three scientists from the Diffraction Section received hands-on training at ISIS in the United Kingdom to develop and utilise Necsa's neutron facilities optimally, under a DST sponsored fellowship to become familiarised with in-situ thermal sample environments relevant to the new neutron scattering facilities at Necsa. One scientist was invited on an all-expenses paid trip by KAERI (Korea) under the SA-Korean bilateral agreement to conduct neutron radiography experiments using the beam line facility at HANARO research reactor.
- Dr AM Venter has been re-appointed as an extraordinary professor with NWU.
- Radiation Science personnel supported the Universities of Pretoria and North West as external examiners for three MSc and one PhD theses and they reviewed three research paper manuscripts from post graduate students using the microfocus X-ray facility, to be published in peer reviewed journals.

APPLIED CHEMISTRY DEPARTMENT

The purpose of the Applied Chemistry department is to establish and maintain core expertise in the chemistry of the nuclear fuel cycle, chemistry of nuclear materials in general, and related spin-off technologies and activities, based on which new products and services can be developed. Main core skills areas are in: Nuclear Fuel Cycle related materials beneficiation; plasma based material modification and processing; waste management technology development; and fluorine technology. In this section of the report progress and innovative developments in these areas, and their associated contract research projects will be highlighted. Important National System of Innovation programs, such as the Fluorine Expansion Initiative (FEI) and the Advanced Materials Initiative (AMI) programs of the DST reaped significant benefit from the research involvement of Applied Chemistry, through R&TD's specialized core skills.



Highlights

Technology Development programs with local and international collaborations

Nuclear Fuel Cycle Development Programme

The Nuclear Fuel Cycle (NFC) refers to all processes commencing with uranium mining, fabrication of nuclear fuel and the post-reactor processes to manage the nuclear waste created by all these processes. In Necsa, R&TD skills development and demonstration of NFC processes are pursued to firstly support isotope production of NTP, but also to prepare for possible future localisation in the case of a new nuclear built programme.

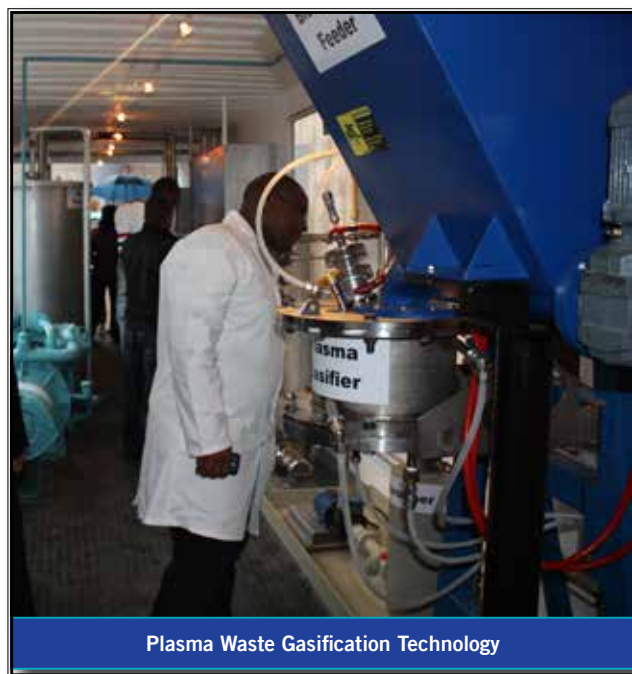
Good progress was made with research related to the purification and homogenisation of uranium feed material for conversion to UF_6 . First, an ion-exchange based purification process that focussed on the selective removal of impurities from the uranium feed stream was evaluated. Secondly, a membrane-assisted solvent extraction process has been developed to recover uranium from the historic “un-burnt” waste stream, and potentially other sources, such as fluoride-based waste streams associated with NFC activities, including uranium feed material for a conversion plant. The process is based on the well-known HNO_3 /TBP solvent extraction system and could also be used to purify uranium from other waste streams, including NFC back-end waste streams.

As part of the Advanced Metals Initiative programme a laboratory study for the recovery of uranium from U_3Si_2 manufacturing scrap has progressed well. The aim is to finally convert the recovered uranium to uranium metal for the production of U_3Si_2 . Plasma Gasification Development Program

Plasma Gasification Development Programme

Plasma gasification technology was further developed for nuclear as well as non-nuclear applications. In the nuclear field, the technology is applicable to the destruction of contaminated waste (e.g. thermal destruction of organic liquids and solvent extracting agents) or for the volume reduction of compressible Low Level Nuclear Waste (LLW). A specification for a plasma

destruction unit for compressible LLW was developed for an international private entity. This will be followed by the construction of such a unit in the coming year, which will first be demonstrated using LLW material available on the Necsa site.



In the non-nuclear field, this technology is applicable to organic toxic waste destruction (e.g. pesticides) or biomaterial gasification. In selected cases the off-gas could be utilised in the form of heat or synthetic fuels. Necsa has developed Plasma Waste gasification technology and through SANEDI funding, has built a 0.5 tons per day technology demonstration system on site, which has ignited interest from potential industry partners. This system uses wood chips as feed material and by powering an internal combustion engine with the off-gas. Work continued on the optimisation of the unit.

The commercial viability of this technology can be demonstrated at different plant sizes for different feed materials (e.g. by changing the solid feeder to a liquid feeder), which include tyre waste, municipality solid waste, electronic waste, medical waste, etc.

An industry partner for the tyre feedstock has been identified, while funding for technology development based on tyre gasification and conversion into energy is at the Due Diligence Stage of the TIA Funding Application review process.

Plasma Spheroidisation Development Programme

The plasma spheroidisation unit that was acquired through a National Equipment Programme allocation from the NRF was used to successfully spheroidise a number of different alloy powders. Most notably, kilogramme quantities of Ti6V4 alloy material were spheroidised for the CSIR Ti-Centre of Competence. Spheroidised powders are used for 3D printing of components, which in South Africa is currently focussed on the aerospace and medical industries but to be extended to the precious metal and refractory industries.

Surface contamination of these powders is a serious threat as it negatively influences final component strength. Necsa is now focused on reducing surface contamination through different methods guided by appropriate analysis of e.g. the oxygen concentration. Comparative tests have already indicated that the Necsa produced powders are as good as imported powders in terms of physical attributes. A more precise and versatile combustion analyser is required to complete the chemical attributes of the powders to make South Africa competitive in the production of spheroidised titanium-based powders.

Fluorochemical Technology Development Programme

Fluorine-related technology and know-how have been retained from previous Nuclear Fuel Cycle (NFC) endeavours at Necsa for potential deployment in a revived NFC for a future energy generation fleet. Research and Technology Development focuses on commercial fluorine spinoff products in support of Necsa's Pelchem subsidiary and expanding the range of fluorochemical products in support of South Africa's mineral beneficiation drive.

Product development through the Fluorochemical Expansion Initiative (FEI) funded by DST focuses on a range of chemicals, e.g. the electronic gases NF_3 and COF_2 as well as fully fluorinated fluorocarbon liquids, such as perfluorodecalin (PFD), which is used in the medical and cosmetic industries.

Under the DST-funded Energy Storage programme, new processes to develop products, such as the LiPF_6 electrolytes were investigated. The aim is to improve electrolyte products for the rapidly expanding energy

storage market. In addition, very promising preliminary results were being achieved with the fluorination of manganese-based cathode materials, which is primed to improve the lifespan of standard lithium-ion batteries. This work is being done in collaboration with Argonne National Laboratory (ANL) in the USA.

Waste Management Development Programme

Research and development continued on the processing of high level nuclear waste streams through the development of partitioning and conditioning technologies. The aim of this programme is to recover enriched uranium for reuse in isotope production as well as to develop encapsulation matrices for high level nuclear waste for final safe disposal.

The selective leaching and initial purification of enriched uranium from the Mo-99 manufacturing residue was demonstrated at gram scale with 5 - and 10 - year old cooled down waste material, with the isotopes responsible for most of the total radioactivity being selectively removed. The final purification step, using HNO_3 /TBP membrane assisted solvent extraction purification technology to return the enriched uranium for target plate manufacturing, was successfully demonstrated at laboratory level.

The programme to develop encapsulation matrices for Mo-99 manufacturing waste streams is supported by the Argonne National Laboratories in the USA. This work is executed in collaboration with the Australian Nuclear Science and Technology Organisation (ANSTO) and the outputs are published as open reports. Further progress of this work is seriously constrained by funding. However, experience gained in this project would assist South Africa when making choices on how to dispose of High Level nuclear waste.

Plasma Dissociated Zirconium/Pigments Development Programme

Necsa has developed a process for the production of inorganic doped zircon pigments (blue, yellow and iron pink) and Plasma Dissociated Zircon (PDZ) which is aligned to the country's minerals beneficiation objective.

Under a license from Necsa, Brinni Beneficiation Technologies (Pty) Ltd - a start-up company owned by IDC and Ishango Scientific Systems Pty Ltd, are



interested in commercialising Necsa's technology by manufacturing zirconium pigments for the ceramics industry. As a first step in the commercialisation effort, Necsa completed a pre-feasibility study on behalf of Brinni through R4m funding made available by Industrial Development Corporation (IDC). The pre-feasibility indicated favourable outcome both commercially and technically, as a result Brinni is executing the next phase (bankable feasibility) of the commercialisation effort in 2019/2020.

Neodymium Trifluoride (NdF₃) Development Programme

NdF₃ is the source of neodymium metal, a lanthanide used mainly in the manufacture of permanent magnets for various commercial applications. As part of South Africa's minerals beneficiation objective, Necsa has developed a cost-effective and environmentally friendly process for converting neodymium oxide to neodymium fluoride, which is part of Necsa's capability for conversion of metal oxides to metal fluorides.

Necsa has licensed the NdF₃ production process to a local private company (a technology and commercial partner), who in turn has secured innovation type funding to develop a demonstration plant for this process.

Technical Cooperation Projects

Within the framework of the Energy Storage programme, DST has resolved to put in place a funding instrument for collaboration with Argonne National Laboratory (ANL) for the whole Energy Storage consortium, under a CRADA (collaborative research and development agreement). Collaboration with ANL is currently on the development of superior cathode materials but will be expanded to developing advanced electrolytes for Li-ion batteries.

Conferences, visits and collaborative contributions

Overseas visits made by Necsa researcher to Edinburgh, Scotland from the 4th to the 7th of November 2018. This is an annual meeting, Reduced Enrichment for Research and Test Reactors (RERTR). The latest development regarding HEU minimization worldwide, conversion of research reactors to LEU fuels and the development of new fuels such as U-Mo and qualification programmes were discussed during the conference.

Necsa was represented at the 2018 Mo-99 Topical Meeting in Knoxville (Tennessee) and Fabrication Meeting at (ANL) in Chicago (Illinois). The purpose of the visit was to gain first exposure to target plate manufacturing technologies used in the Mo-99 value chain, applicable to Necsa. Contact was made with international players in target plate manufacturing and Mo-99 isotope production and diagnostic technologies available with a view to establish the latest technologies at Necsa.

Recognition

Only one permanent staff member and one contract worker obtained a postgraduate degrees (MSc & PhD respectively) during the period 1 April 2018 to 31 March 2019.

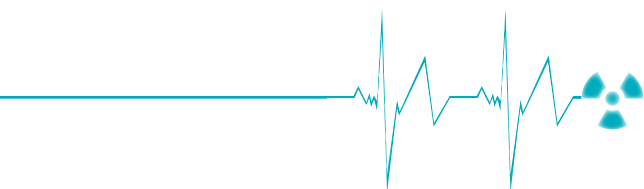
Training, Human Capacity building and Talent Management

Capacity development (pipeline development) and talent management (of own personnel) are important for establishing the knowledge base for applied R&TD activities to assist with development of value adding products and services. Applied Chemistry personnel acted as lecturers for the following academic course:

- Postgraduate degree at CARST (Centre of Applied Radiation Science and Technology) at NWU, Mafikeng campus. Applied Chemistry personnel acted as co-supervisors for 3 M.Sc. students; one that has already successfully completed their M.Sc. study.

Furthermore, on average Applied Chemistry supported 17 postgraduate students at university (mostly through AMI funding instruments) and 10 postgraduate students in Necsa laboratories where Applied Chemistry personnel acted as co-supervisors. Seven member of Applied Chemistry were also registered for postgraduate studies.

During the reporting period two NRF Scarce Skills Development Fund Postdoctoral Fellowships were awarded to 2 Applied Chemistry doctoral students and a NRF postdoctoral fellowship was also award. All three have accepted three year contract appointments in Applied Chemistry for their postdoctoral studies.



RADIOCHEMISTRY DEPARTMENT

R&TD continued to perform pipeline research to retain and enhance Necsa's status as an internationally competitive radiochemical isotope producer. Thus contribute to enhancing quality of life. Besides the development of radiochemical (precursors for radiopharmaceuticals), the emphasis has shifted further down the value chain to the development of new radiopharmaceuticals. Included in this section are highlights of several product development programmes, the technology of which is matured to culminate in commercial outcomes. At early technology readiness levels, these are supported by funded technology platforms/clusters to enable the required NSI and industry partnerships.

Product Development Programmes

Development of a single vial ^{68}Ga -PSMA kit for treating prostate cancer

Gallium-68 is a new exciting PET imaging radioisotope but its half-life of 68 minutes makes synthesis at a radiopharmacy facility and shipment to the hospital difficult. The solution is a freeze-dried kit where the ^{68}Ga is added in the hospital and the preparation is ready for injection after 10 min – so called “shake and shoot”. The ^{68}Ga can be added to a variety of molecules for different indications.

The most recent is the addition to PSMA which is selective for primary and secondary prostate cancer. The Necsa Radiochemistry group developed a single vial PSMA kit that has passed the technical feasibility study and now needs to undergo GMP compliance before production and distribution under a Section 21 authority of the Medicines Control Council. Necsa secured R34.5m funding from NTP, drawn from the NTP Research & Development and Innovation Fund, to proceed with the next step in the value chain, namely the production according to good manufacturing practice in collaboration with the P3000 radiopharmaceutical facility. The work will start in earnest in the new financial year.

Completion of the Phase I/II Clinical Trial for a Companion Diagnostic

Part A of the phase I/II clinical trial on the use of $^{195\text{m}}\text{Pt}$ -cisplatin as a companion diagnostic to optimise and individualise the dose for patients that was funded by the Technology Innovation Agency (TIA) for completion of the trial preparation phase has been completed in this financial year. The next phase (Part B) is execution of the trial. A due diligence for this part was completed with TIA (the potential co-funder of this part). A GMP license is in process in order to produce the $^{195\text{m}}\text{Pt}$ -cisplatin for clinical trials.

A new theranostic for identifying and treating tumours

The molecular compound, GluCABTM is a new theranostic and will initially be used to seek, identify, and treat solid mass tumours such as those found in breast and ovarian cancer. The term “theranostics” was coined to define an agent used for diagnosis via imaging followed by therapy and is fast becoming the norm in personalised medicine. A local pharmaceutical company is the exclusive license holder and funding the current preclinical phase which was completed. The concept of passive targeting through the enhanced permeability and retention (EPR) effect was demonstrated. Micro-PET evaluation in xenografted mice was successful and clear tumour uptake could be demonstrated. The proposal for the next phase which involves the active targeting through a cleavable linker has been compiled.

Ethylenedicysteine Deoxyglucose

Ethylenedicysteine Deoxyglucose (ECDG) is a diagnostic drug used in the detection of tumour lesions. This is also funded by a local pharmaceutical company. The technology has progressed to a kit formulation and is awaiting further testing in limited Phase II clinical trials at the University of Free State Universitas hospital. SAHPRA and Ethics Committee approval were finally obtained for a further 15 lymphoma patients. In January 2019. Patient recruitment has started and execution of the trial will happen in the new financial year.



Terbium-161 PSMA

Necsa, Radiochemistry was part of an international team that won the Marie Curie Award for best oral presentation, “Terbium-161 for PSMA-Targeted Radionuclide Therapy of Prostate Cancer” at the 31st Annual European Association of Nuclear Medicine (EANM) conference held in Dusseldorf in October 2018. The other team members are from distinguished European institutes such as; Paul Scherrer Institute - Switzerland, University of Zurich - Switzerland, University of Gothenburg, Sweden and Institute Laue-Langevin, France. This Isotope is reactor based and is expected to replace Lutetium-177 due to its additional Auger emissions (very short range) which enable the irradiation of micro metastasis that form due to Neuroendocrine and Prostate cancers. This creates opportunities for Necsa/NTP.

Enabling Technology Platforms/Clusters

Nuclear Medicine Research Infrastructure

The South African Research Infrastructure Roadmap (SARIR) was launched by the Department of Science and Technology-DST in 2016. Nuclear Medicine is one of the successful areas. The DST approved the application for Nuclear Medicine Research Infrastructure (NuMeRI) in 2017 and the revised first three-year budget was awarded to Necsa to carry out the incubation phase. Execution of the NuMeRI is in full swing.



The development of the PET-TB facility at Tygerberg and the preclinical imaging facility at Necsa received priority. Under the agreement between Necsa and

Stellenbosch University, the NII (NuMeRI Infection Imaging centre) was ordered through Necsa the radiopharmacy refurbishment from Axim after a tender process. The Lumina optical imaging equipment was installed and commissioned while the autoradiography and cryotome solution was ordered. The NuMeRI host for the main facility, Steve Biko Academic Hospital was the successful bidder and (NuMaCS) has been contracted. An independent legal entity (NuMeRI NPC) was registered in February 2019 which will take NuMeRI forward including as the host for NuMeRI from 1 April 2020. Handover from Necsa to the NPC will take place in the 2019/2020 financial year.

Nuclear Technologies in Medicine and Biosciences Initiative

The Nuclear Technologies in Medicine and the Biosciences Initiative (NTeMBI) is a national technology platform developed and managed by the Necsa and funded by the Department of Science and Technology (DST). NTeMBI is a platform that enables research on new radiopharmaceuticals as well as the use of radiotracers to assist other researchers in answering societal questions. In contrast to NuMeRI (which centres on infrastructure) NTeMBI develops human capacity through research projects that involve postgraduate students. The contract and its extension have been completed and DST has indicated that the future of NTeMBI should be via the cluster model funded through TIA but hosted by Necsa. Work within the new NTeMBI cluster will start in 2019/20 after contracting with all entities is concluded.

The Malaria-SIT project aims to achieve Malaria vector control through the release of sterile male mosquitos. Several years ago DST requested NTeMBI to manage this project on their behalf due to the linkages to radiation research and the project linkages with the IAEA whom heavily supported this project as is the case with other SIT projects worldwide. The Malaria-SIT project historically falls under the NTeMBI steering committee (has a connection with radiation) but is financially separate. It is therefore managed by Necsa (NTeMBI coordinator) but the team is based at the National Institute for Communicable Diseases (NICD) in Johannesburg. The team headed by Dr Munhenga consists of three permanent employees partially seconded to this project and five post graduate students.

The building of the pilot in sectary (funded by DST) on the NICD site by a project team from Pelindaba Enterprise has made good progress. The building work is complete. Additional funding had to be sought from the DST to complete the facility.

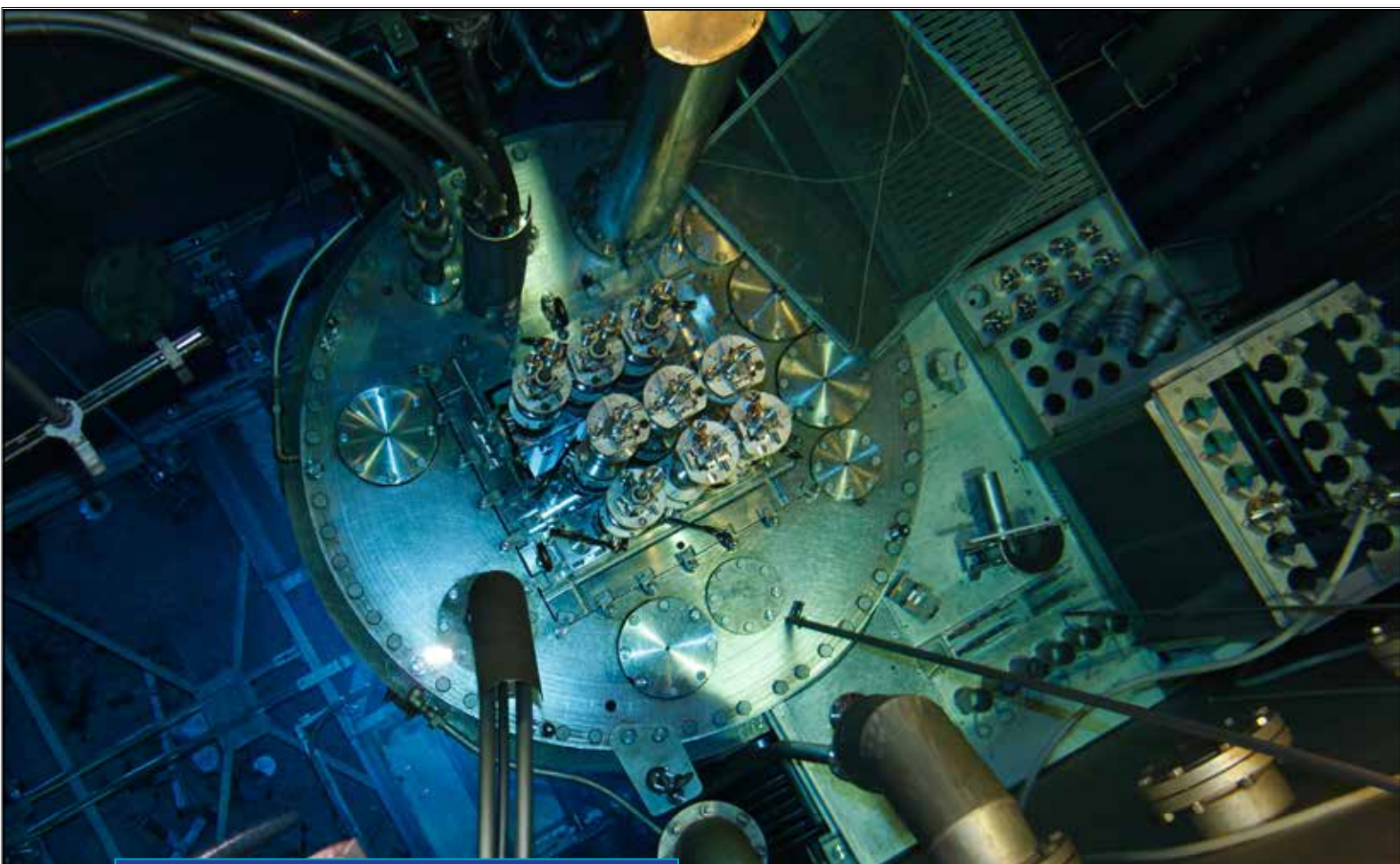
Recognition

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members are from distinguished European institutes such as; Paul Scherrer Institute - Switzerland, University of Zurich - Switzerland, University of Gothenburg - Sweden and Institute Laue-Langevin, Grenoble, France.

One staff member served on the SACI (SA Chemical Institute) Gauteng North management committee who successfully organised the SACI convention 2018.

Two staff members successfully completed and received the EANM Radiopharmacy certificate which allows them to take responsibility for the production of radiopharmaceuticals.



Necsa SAFARI-1 Research Reactor



NUCLEAR COMPLIANCE AND SERVICES



SECURITY

The objective of the Security Services department is to implement and ensure compliance to security measures at Necsa's site. Security measures are implemented in a graded approach with sufficient defence in depth at each facility based on IAEA facility categorization guidelines combined with the current Design Basis Threat. In accordance with international best practices, security is achieved through implementing of security measures applying the defence-in-depth principle. This varies per facility based on its risk profile in nuclear and chemical facilities to prevent unauthorized removal of assets including nuclear material and/or potential sabotage.

As a National Key Point (NKP) in terms of the National Key Points Act, Necsa is audited on an annual basis to evaluate effectiveness of implementation of NKP requirements. The NKP Office of the South African Police Services performs the security evaluation focusing on management of the security operations, administration of the security officers, and the adequacy of the physical protection measures. The annual NKP security evaluation was conducted in August 2018 and the result are still outstanding.

Year	2015	2016	2017	2018
NKP Compliance Rating	98.98%	98.72%	97.79%	Results not yet made available by the SAPS NKP Office.

The Necsa Joint Planning Committee, established in terms of the National Key Point Act brings together various stakeholders such as the SAPS, State Security Agency, Necsa, Madibeng Municipality, and the National Nuclear Regulator. The committee met five times during the 2018/2019 financial year to provide guidance, and evaluate security and emergency processes for the site

The following security related system upgrades were undertaken during 2018/ 2019:

Area of Upgrade	Work Performed
Access Control Systems	Software and hardware upgrades and data storage capacity improvements.
Selected Facilities	Hardening, surveillance and redundancy measures.
Surveillance System	Additional surveillance systems installed in some of the critical areas and facilities
Uninterrupted Power	Modern and High Capacity Uninterrupted Power Supply-UPS system installed to supply critical security system infrastructure.

SAFETY CULTURE

The Safety Culture Enhancement unit is responsible for providing guidance, support and implementation of safety culture aspects at Necsa facilities. The term "Safety Culture" encompasses Conventional, Nuclear and Chemical Safety Culture. During the year, various awareness sessions were conducted within the Necsa Group and all radiological facilities completed their departmental Safety Culture Enhancement Plans.

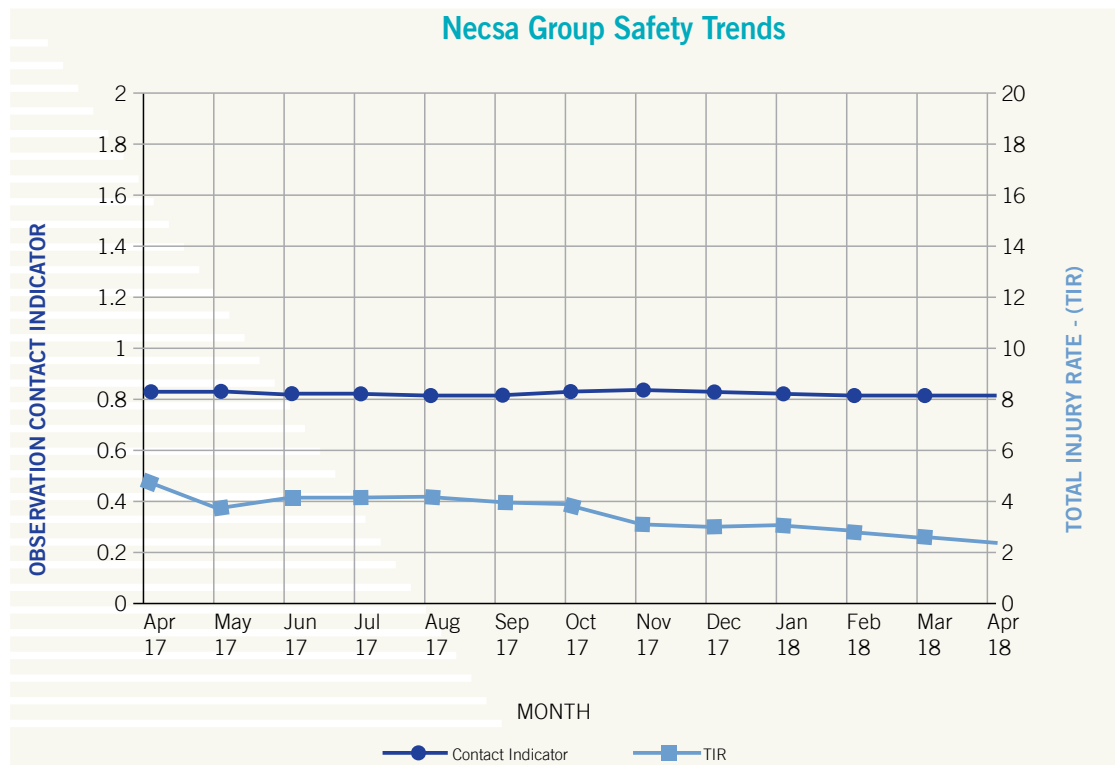
Following the NTP events in 2017 and the identification of a poor safety culture, the IAEA conducted an Independent Safety Culture Assessment (ISCA) at Necsa during August 2018. The assessment was done on the NTP (P1701); SAFARI-1; MTR; Pelchem; and NLM (Solid waste and LEMS sections) facilities. A total number of 130 interviews were conducted with individual interviews on senior management and focus group discussions with management and random selected staff. The finalised report was received end

January 2019 and a corrective action plan was submitted to both the NNR and the DoE.

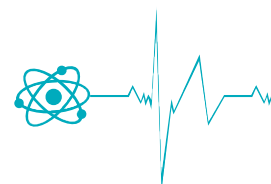
As part of improving the Necsa Group Safety Culture, Necsa, in collaboration with the USA Oak Ridge Laboratory, embarked on “Changing Behaviour - Enhancing Nuclear Safety and Security Culture” workshops. During November 2018, eight workshops for NTP personnel took place. Further workshops for the

Necsa Group are planned during the next financial year. These workshops, presented by International Subject Matter Experts, are fully sponsored by the USA Oak Ridge Laboratory.

The graph below shows the Behaviour-Based Safety Contact Indicator reflecting the percentage of staff observed as well as the monthly Total Injury Rate.



Month	Total Injury rate (TIR)	Observation Contact Indicator
April 2018	2.67	0.86
May 2018	2.83	0.88
June 2018	2.52	0.90
July 2018	2.44	0.92
August 2018	2.5	0.93
September 2018	2.51	0.94
October 2018	2.67	0.95
November 2018	2.87	0.96
December 2018	3.03	0.97
January 2019	3.18	0.98
February 2019	3.21	1
March 2019	3.4	1



EMERGENCY PLANNING

The Regular emergency exercises are conducted for the purpose of demonstrating adequacy of the site emergency plan and testing the proper implementation of plans and procedures during activation of the current arrangements in case of an emergency. Emergency exercises also serve the purpose of training Necsa personnel and all emergency functionaries on emergency procedures and to identify any deficiencies in the current plan. Six scheduled emergency exercises were successfully carried out as planned during 2018.

Necsa continues to implement corrective actions for the identified non-compliances from the emergency exercises. Some non-compliances relate to the emergency response support by external intervening organizations and those are being addressed through the emergency planning committees and disaster management structures of the Madibeng and Tshwane Municipalities in a continuous effort to foster successful partnerships and allow seamless coordination of resources should this be required.

NUCLEAR SAFEGUARDS

Necsa performs Safeguards and Nuclear Non-Proliferation activities on behalf of the South African Government as delegated by the Department of Energy in terms of the Nuclear Energy Act. This is required by the Nuclear Non-Proliferation Treaty as detailed in the Comprehensive Safeguards Agreement, both entered into with the International Atomic Energy Agency (IAEA) in 1991. Safeguards implementation was further strengthened by the Additional Protocol to the Safeguards Agreement, signed in 2002.

Inspection Activities and Additional Protocol

All inspections carried out during the reporting period met the IAEA Safeguards requirements and were conclusive. The annual additional protocol declarations were submitted to the IAEA as required by the Protocol Additional to the Comprehensive Safeguards Agreement in May 2018 and were accepted as satisfactory by the IAEA.

Having evaluated the results of Safeguards activities and all other available Safeguards relevant information for South Africa, the Agency found that there was no indication of diversion of declared nuclear material from peaceful nuclear activities and no indication of undeclared nuclear material and activities in the State. On this basis, the Agency concluded that all nuclear material in South Africa remained in peaceful activities during 2018.

Non-Proliferation

Necsa officials participated in the training course on Nuclear Non-Proliferation and Disarmament held on 5-9 November 2018 hosted by the Department of International Relations and Cooperation. The training programme included topics such as the Global Nuclear Non-Proliferation and Disarmament Challenges, the Treaty on the Prohibition of Nuclear Weapons and the South African nuclear disarmament experience.

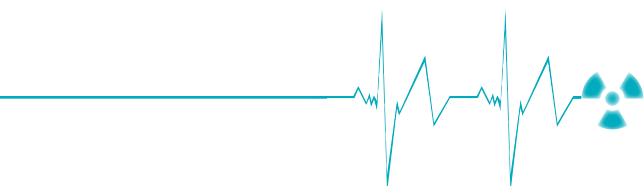
Necsa representatives continued to participate in the Non-Proliferation Control Committee and Council meetings on a regular basis to provide inputs on the evaluation and recommendations of applications received from various national entities for export and/or import of controlled goods.

Member State Support Program (MSSP)

A successful IAEA Regional Training Course on Additional Protocol hosted by the Department of Energy in partnership with Necsa was held on 26 - 30 November 2018 in Cape Town. The training course was attended by participants from Botswana, Cameroon, Central African Republic, Gabon, Ghana, Kenya, Madagascar, Mozambique, Seychelles, South Africa, Uganda and Tanzania. The objective of the training was to provide an overview of the Protocol reporter and an understanding of the AP declarations to the IAEA.

Non-Destructive Assay

The state declaration to the IAEA of U-residue generated from the molybdenum production process at NTP is currently based on estimated values. Subsequently the Uranium residue project that involves the High Activity - Active Well Coincidence Counter (HA-AWCC) was initiated by RSA in collaboration with the USA to develop a technique to quantify the U-residues at



NTP. A custom built neutron counter was designed, manufactured and installed at NTP for characterisation of the uranium residues. The hot commissioning of the HA-AWCC is still ongoing.

Comprehensive Test Ban Treaty Organization (CTBTO)

Necsa is the designated authority for the establishment, operation and maintenance of the CTBTO International Monitoring System (IMS) to be stationed in Cape Town. The Proposal for infrastructure upgrade on the IMS (RN62) project was aligned with the allocated project budget through consultation with CTBTO and was resubmitted to CTBTO in December 2018 for approval.

LICENSING & SAFETY ANALYSIS

The Licensing and Safety Analysis Department objective is to maintain effective protection of persons, property, and the environment. It is governed by a number of acts including the National Nuclear Regulator and Nuclear Energy Acts of 1999 as well as international treaties, conventions, and agreements. Necsa has 41 Nuclear Installation Licenses issued by the National Nuclear Regulator (NNR) for various nuclear and radiation facilities. Each of the licenses is displayed in English, Setswana and Afrikaans at the respective facilities.

The Licensing and Safety Analysis Department manages these licenses, supports the facilities with safety analyses and preparation of safety cases as well as liaising with the NNR and various government departments.

Intermittent Suspension of Operations at the NTP Radiochemicals Facility

The NTP Radiochemical Facility experienced interruption of operations related to the production of Mo-99 during the year due to contravention of NNR regulatory conditions. NTP Operations resumed in November 2018 but intermittent shutdowns have been experienced since then.

Necsa and NTP continue to regularly engage with the NNR to establish a sustainable solution to resolve the safety challenges at the facility.

Compliance with Nuclear License Requirements

The Compliance Assurance Enforcement Inspectorate (CAE) was established on 01 March 2018, with the mandate of ensuring that license and authorisation conditions of the National Nuclear Regulator (NNR) and Department of Health (DoH), amongst other authorities, are adequately and effectively implemented at Necsa facilities. An Inspection process was developed for a graded approach to integrate the Areas of Concern raised with the Necsa existing systems and risk based approaches. Due to the newness of the function and limited resources, the focus for the 2018/2019 financial year was NTP operations. Twelve (12) Inspections were completed with a total of 131 Areas of Concern and twenty eight (28) observations raised. Areas of Concern consisted of 79% continual Improvements and 21% non-compliances. All non-compliances are required to be evaluated by the facility and reported on as per the corporate events management system.

i. Compliance with Water Permit Requirements

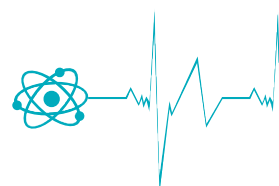
Compliance is measured against water permit no. 1874B. The table below effects the effluent generated during the water year from 1 October 2017 to 30 September 2018. The Pelindaba West Pans (PW 9-14 with a capacity of 14 748 m³) and Beva Pans (PW A-C and 1-8 with a capacity of 16 054 m³) are excluded since they are not receiving effluent.

ii. Compliance with Air Permit Requirements

The total fluoride emissions for the January 2018 to December 2018 period (calendar year) amounted to 2 797 kg, which was higher by 1 419 kg compared to the previous year's (2017) emission of 1 378 kg. The monthly site limit was not exceeded during the year. Total fluoride emissions for the reporting period were 16 % of the annual air emission license constraint of 17 695 kg per year.

iii. Compliance with Environmental Requirements of the Nuclear License

No nuclear occurrence related to the environment occurred during the 2018/19 financial year. Radiation dose to the public, as modelled on actual authorised releases, indicates that there was no significant dose impact to people or the environment due to Necsa's activities.



Liquid Effluent Generated for period October 2017 to September 2018

Effluent Destination	Volume (m ³)	Permit Limit (m ³)	Percentage of Permitted (%)	Percentage Change Year-on-Year (%)
Crocodile River	67 280	250 000	26.912	1.62
PE Pans 1-5	15 594	19 000	82.07	-29.12
PE Pan 6	259	8 500	3.05	-97.12
PE Pan 9	2 678	15 000	17.85	
PE Pan 7	0	-	-	-
PE Pan 8	1 340	4 500	29.78	583.67
Total	92 007	297 000	30.98	-13.14

Discharges of Industrial Effluent and Low Active Effluent to the Crocodile River – October 2017 to September 2018

	Q1 (2017) Oct- Dec	Q2 (2018) Jan-March	Q3 (2018) Apr-Jun	Q4 (2018) Jul-Sept	YTD Oct 2017 - Sept 2018
Industrial Effluent(m ³)	17 160	18 000	15 120	12 240	62 520
Low Active Effluent (m ³)	1 386	693	1 342	1 339	4 760
Total effluent Discharged to Crocodile River (m ³)	18 546	18 693	16 462	13 579	67 280
Dose Impact (μSV)*	1.0974	0.4997	0.7565	0.6369	2.9905

Modelled Dose to the Public

	2016 Calendar Year mSv	2017 Calendar Year mSv	2018 Calendar Year mSv
Liquid to Crocodile River	0.0044	0.0057	0.0025
Gaseous Releases	0.0012	0.0012	0.0002
Total	0.0056	0.0069	0.0027
% of the annual public dose constraint (0.250 mSv)	2.229 %	2.783 %	1.086 %

The environmental monitoring programme at Vaalputs was in full compliance with sample reporting levels. No environmental nuclear occurrences were registered.



FACILITIES & UTILITES

Aging Infrastructure, Equipment and Assets

Although Necsa Maintenance Services endeavours to adopt best maintenance practices (in spite of the challenges that Necsa experience in terms of funding), there are areas that are no longer feasible to maintain and needs to be replaced or refurbished by modern technologies.

There are over one hundred and seventy (170) buildings or facilities on site. Some of these facilities are still operational, some are in care and maintenance and others are not utilised.

Below are some of the areas identified for refurbishment or replacement:

- Ventilation and air-conditioning systems
- Steam generation and the associated effluent handling systems
- Water storage and supply/network systems (Rand water, process water & demineralized water)

- Systems and structures
- Sewer and underground piping

- Vehicles, transport, machinery and lifting equipment

SAFETY SERVICES

The Safety Services department is responsible for Safety, Health, Environment and Quality (SHEQ) functions at Necsa: Health and Medical Services, Radiation Protection, Conventional Safety Support, Emergency Services and Emergency Preparedness as well as SHEQ Management System Compliance and Auditing.

44 SHEQ audits were conducted in this reporting period compared to 47 in the previous year.

For the financial year there were 142 nuclear occurrences registered with the NNR with an INES (International Nuclear Event Rating Scale) rating of 0, and no nuclear occurrence with an INES rating of 1 or more was reported. The Necsa Group's overall Disabling Injury Incidence Rate (DIIR) improved from 1.03 to 0.68 compared with the previous financial year status.



PELINDABA ENTERPRISES



Necsa's Industrial Manufacturing

Pelindaba Manufacturing

Pelindaba Manufacturing houses Necsa's fabrication and machining capabilities within its two departmental units, Nuclear Manufacturing and Industrial manufacturing. Nuclear Manufacturing (NM) has ASME III certification authorisations 'N', 'NA', 'NPT' and 'NS' valid until 24 June 2020.

Nuclear Manufacturing (NM) also achieved a successful audit by an international ASME VIII audit team in March 2019 that resulted in the ASME re-certification of authorisation to manufacture pressure vessels valid until May 2022.

The ASME certificates give NM the capability to design, fabricate, and assemble nuclear components which includes but is not limited to vessels, piping, supports, and tanks. Manufacturing conforms to ISO 9001 for general industrial products, ASME VIII for coded non-nuclear grade components, ASME III for coded nuclear grade components, and ISO 3834 for welding.

During the 2018/19 financial year, Pelindaba Manufacturing successfully passed audits for ISO 9001:2015 by the South African Bureau of Standards.

Pelindaba Manufacturing made a significant progress on the SEC Cooling Piping project for Eskom Koeberg. The project scope consists of procurement of ASME III material, fabrication of piping, testing and delivery to Koeberg Nuclear Power Station. All the piping is scheduled to be delivered by March 2020.

Holtec International placed an order on Pelindaba Manufacturing to fabricate cask tilting plates and

fuel spacers for Koeberg Nuclear Power Station. The development project of manufacturing of 30B cylinders for the international marketplace was also commenced.

Pelindaba Manufacturing increased its manufacturing scope by acquiring a plastic pipe fusion welding machine and training operators. In order to improve on the accuracy of complex dimensional measuring during quality control inspections Pelindaba Manufacturing acquired a MetraSCAN 3D optical machine. The use of the machine results in the fabrication of better quality products.

Pelindaba Engineering Services

Pelindaba Engineering Services provides engineering design and draughting services for the Necsa Group including its subsidiaries, NTP and Pelchem. Its general responsibilities entail the various engineering disciplines comprising of Mechanical, Process, Chemical, Electrical, Civil and Control & Instrumentation.

In the 2018/19 financial year, Pelindaba Engineering Services was involved in several projects for internal and external clients such as NTP, Pelchem, Eskom, and Tenex. The major projects undertaken within this period were:

- Eskom SEC Piping: A multiyear project, currently at 60% progress and on schedule for completion at the end of December 2019.
- KSB -DUVHA Cooler & Pipe.
- Holtec Tilting Plates & Fuel Spacers.
- Pelchem Y Piece for Mech Deal.
- 30B Cylinders for Tenex: Pelindaba Enterprises Manufacturing through TENEX, supplies the Federal Republic of Russia's ROSATOM group of entities with the 30B UF6 containers. A letter of intent has been submitted to the DOE for Minister's approval, no feedback received yet.

Pelindaba Consulting Services

Projects and Consulting Services (P&CS) provides project management and administrative support service to Necsa and external Clients.

In 2018/19, Projects and Consulting Services worked on streamlining all projects within the Pelindaba Enterprises Division, meaning all projects within the division (Including NM & Engineering) was secured and managed through P&CS. Main highlights on projects managed by the department are as listed below:

- NLM required a project Manager to assist with the management of the Decontamination and Decommission projects. We have managed to clear all audit finding raised by the audit report.
- The Property department roof repair project: together with Engineering Services identified the scope of work required for roof repairs on P1800 and the Training Centre. This project is scheduled for completion in the 2019/2020 financial year.
- Thabana Pipe Store Extension Project is a multi-year project that is being managed on behalf of NLM, this project is to extend the waste storage facility for storing NTP and SAFARI-1 Waste, and it is currently projected to be completed in 2021.
- SAFARI-1 Projects - involve replacement of equipment and meeting new regulatory requirements.
- Continues management of the Security upgrade project (Multi-year) including the upgrade of gate migration systems.
- The Eskom Metallic Waste Programme - this includes several projects of which Necsa will be appointed in a form of task orders.
- The MTR Feasibility Study (Security of Supply).
- The MTR Waste Management Projects.
- NCS - Drones implementation projects.
- NCS - Concrete pathway project.

Projects & Consulting Services began working on updating their operational processes and procedures in order to obtain ISO certification.

Below is the Pelindaba Enterprises financial performance report for the financial year 2018/19:

Local Sales recorded a negative year-to-date variance of (R12.7m) due to the adjustment reversal of (R24.3m) that was transferred from Payments Received in Advance in the previous financial year.

Foreign Sales recorded a positive year-to-date variance of R1.1m due to income received from Holtech International which was not included in the budget as the contract was only concluded after the budget was finalised.

Intragroup Sales recorded a negative variance of (R12.3m) due to NTP not being in production for most of the financial year as well as disputed invoices.

Intra Company Income recorded a positive year-to-date variance of (R4.8m) as a result of recoveries from Security Sandia Project.

Personnel Expenses recorded a positive year-to-date variance of R1.5m and at year-end is a result of savings from resignations, death in service and transfers.

Consultants Fees, the positive year-to-date variance of R0.7m is due to utilising fewer consultants.

Cost of Sales, a positive year-to-date variance of R4.5m is due to the reversal of material previously transferred from WIP.

Internal recoveries & labour allocations recorded a negative (R29.7m) year-to-date variance is a result of low labour utilization caused by the delays experienced on the Eskom SEC Piping project.

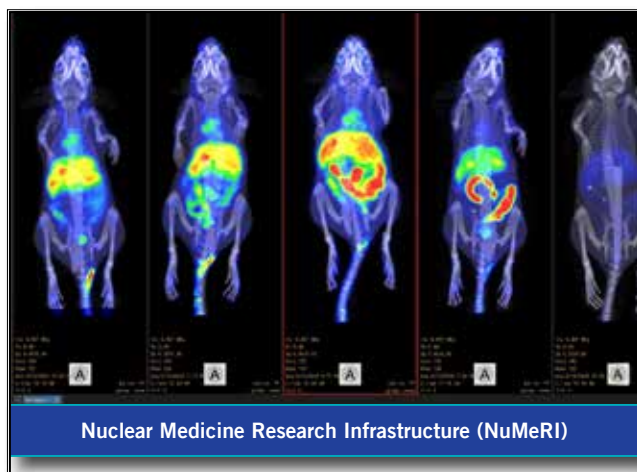
Decrease / (Increase) in Inventories show a negative year-to-date variance of (R5.2m) is a result of R66m transferred from work in progress to cost of sales and an reversal adjustment of (R21,9m) from previous financial year's transfers.

Decrease / (Increase) in Trade and other receivables show a positive year-to-date variance of R14m is due to the settlement of invoices issued.

A Decrease / Increase in Trade and other payables show a negative variance of (R19.3m) is due to transfer of R60m to Revenue.



BUSINESS DEVELOPMENT AND INNOVATION



The Business Development and Innovation Division is mandated to optimise value creation from Necsa's businesses and to facilitate the identification, protection and exploitation of intellectual property developed and owned by Necsa. The Division provides a leadership role in innovation matters, which includes technology licensing management, securing funding for further development based on sound business principles, and overall leadership of strategic projects with commercial potential across Necsa's strategic impact areas.

Investment and Commercial Partnerships

GluCAB™ - a theranostic drug (see technical details in the R&TD section of this Annual Report).

A funding and technology development partnership was entered into in May 2017 between Necsa, the University of Cape Town (technology partner), and BGM Pharmaceuticals (funding, marketing and distribution partner) to develop and commercialise this ground-breaking, innovative drug. BGM has already committed R1 million to Necsa towards the development of this drug up to pre-clinical trials.

ECDG - a low-cost diagnostic drug for cancer (see technical details in the R&TD section of this Annual Report)

Under the Necsa-BGM pharmaceuticals partnership, BGM will facilitate the acquisition of funding of approximately R80 million to take this drug to market. Necsa has received R1.6 million thus far from BGM for the synthesis of ECDG, kit formulation and limited Phase II-clinical trials.

Plasma Dissociated Zirconium/Pigments

Necsa has developed a process for the production of inorganic doped zircon pigments (blue, yellow and iron pink) and Plasma Dissociated Zircon (PDZ) which is aligned to the country's minerals beneficiation objective.

Under a license from Necsa, Brinni Beneficiation Technologies (Pty) Ltd - a start-up company owned by IDC and Ishango Scientific Systems Pty Ltd, will manufacture zirconium pigments for sale to the ceramics industry. A feasibility study was completed by Brinni through R4m funding made available by the Industrial Development Corporation (IDC).

Plasma Waste-to-Energy Technology

Necsa has developed Plasma Waste gasification technology up to Proof of Concept, and through external funding, has built a 0.5 ton per day demonstration system on site, which has ignited interest from potential industry partners. Design gaps, which are being partially funded from Technology Innovation Agency (TIA)'s Seed Fund Facility, are being closed for this demonstration system.

The commercial viability of this technology can be demonstrated at different plant sizes for different feed materials, which include amongst others tyre waste, municipality solid waste, electronic waste and medical waste.

An industry partner for the tyre feedstock has been identified, while funding for technology development based on tyre gasification and conversion into energy is at the Due Diligence Stage of the TIA Funding Application review process.

Ga-68-PSMA – a diagnostic drug for prostate cancer (see technical details in the R&TD section of this Annual Report)

A partnership was secured between the Nuclear Medicine department at Steve Biko Academic Hospital and NTP. Steve Biko Hospital expressed their intent to be the local off-taker for the product kit. NTP has approved funding of R4.5 Million from its Research and Development and Innovation Fund towards technology development to conduct activities related to Good Manufacturing Practice in kit formulation and is intended to be the market-facing entity to market and sell product kits.

DryKeep® and Air-Dust Filters (Flosep™ Business Expansion)

Necsa has developed an online drying unit based on its successful Drykeep® technology. This technology provides for the continuous removal of water in transformer oil, thereby eliminating the need for the periodic transformer maintenance shutdowns and associated production losses. The technology has been industry-tested and is already in commercial use. Drykeep® was developed by Necsa's Flosep™ business which also sells air dust filters to industry.

To ensure Flosep™ successfully responds to increased demand, Necsa has entered into a public-private partnership with SETTEC Industrial Solutions who will serve as a Marketing, Sales and Distribution partner for the Drykeep® and Flosep™ air filter technologies.

Funding is being sought from relevant funding institutions to enable growth of Flosep.

Manufacture of Neodymium Trifluoride (NdF₃)

NdF₃ is the source of neodymium metal, a lanthanide used mainly in the manufacture of permanent magnets for various commercial applications. As part of South Africa's minerals beneficiation objective, Necsa has developed a cost-effective and environmentally friendly process for converting neodymium oxide to neodymium fluoride, which is part of Necsa's capability for conversion of metal oxides to metal fluorides.

Necsa has licensed the NdF₃ production process to Thermtron Scientific (a technology and commercial partner), who has already secured funding from TIA to develop a demonstration plant for the process.

Seed Fund Innovation and Investment Programme

Necsa was granted a TIA Seed Fund Facility in 2017 to assist in translating research outputs into fundable ideas for technology development and commercialisation.

In addition to the funding already expended on Necsa technologies in 2017/18 to the value of R2 million from the first call on this facility, Necsa secured additional funding of approximately R2.5 million for the 2019/20 financial year in respect of the following technologies:

- A non-intrusive method to do wall thickness monitoring;
- Battery Electrolyte Material Market Development (Lithium and Sodium Hexafluorophosphate);

- Plasma Waste-to-Energy Systems Development; and
- Radon gas monitoring instrument.

Innovation Disclosures and Intellectual Property

Patent Applications:

Necsa filed the following PCT patent applications:

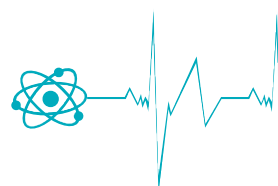
- The manufacturing of Mo-99 via the 'gamma, n reaction', relating to the production of radioisotopes by irradiating a target compound with high energy photons (gamma irradiation). Inventor: Prof Jan Rijn Zeevaart.
- "The Production of Lithium Hexafluorophosphate" claiming a method of producing lithium hexafluorophosphate (LiPF₆) by reacting lithium fluoride (LiF) with phosphorous pentafluoride (PF₅) in a liquid perhalogenated organic compound (such as perfluoredecalin). Inventors: Mpho Lekgoathi, John Le Roux, Danny Mmotong

A US Patent Application with regards to Oral Radiopharmaceuticals in the name of Necsa and North-West University (NWU) has been allowed. Traditionally Technetium (Tc) – based radio-pharmaceuticals are prepared as injectable compositions but patients with a fear of needles or for religious reasons wish to avoid needles or patients undergoing chemotherapy may suffer from arteries collapsing upon insertion of a needle. The Necsa/NWU invention provides an oral route of administering Radiopharmaceuticals.

The patent claims a method of administering a radio labelled pharmaceutical compound to a patient, providing a micro-emulsion (using NWU's patented and trademarked Pheroid™ drug delivery system). This contains a fatty acid based component in an aqueous or other pharmacologically acceptable carrier, mixed with a composition containing a radio labelled pharmaceutical compound, and administering the mixture to the patient orally in a diagnostic or therapeutic method of treatment. Wherein the radio labelled pharmaceutical compound is absorbed through an intestinal tract of the patient and is transported to a required location in the body after administration. Inventors: Prof Jan Rijn Zeevaart at Necsa and Prof Anne Grobler at NWU.

- Innovation disclosures

Innovation disclosures received for the financial year are 10, against an annual target of 8.





Corporate Finance

At a high level, the Corporate Finance Department is responsible for assisting line management to shape the financial direction and sustainability of the company. The core principles are prudence and good corporate governance. Issues of concern are reported to the decision makers such as executives and the Board.

The Corporate Finance Department is responsible for implementing and monitoring internal controls to ensure the achievement of organisational objectives, operationally and strategically. The recording of financial transactions is conducted timeously to ensure that reliable and accurate information strengthens the efficiency and effectiveness of the financial reports. All transactions are recorded in compliance with the prevailing laws, regulations and policies, and procedures.

This department is responsible for assisting line management with the preparation of budgets, forecasting, reporting, and related administrative functions. In addition, it manages the accounting cycles including Payroll, Accounts Payable, Accounts Receivable, Inventory Control, as well as Treasury and Cash Management. The department acts as custodian of Necsa's property, plant and equipment (PPE) and maintains the Necsa asset register, thus ensuring that the entity's PPE are safeguarded and preserved.

The Corporate Finance Department oversees the overall financial strategy of the Necsa Group with respect to its divisions and, to some extent, its subsidiaries. This involves strategic group investment decisions such as Available for Sale Financial Assets, Post-Retirement Medical Aid Liability funding, insurance, bankers and other financial stakeholders. This is to ensure that the company does not invest in risky portfolios or use speculative methods to achieve short term gains that might adversely affect the long term sustainability of the Necsa Group.

Working closely with internal auditors, assurance is provided that accounts are fairly represented and fraudulent transactions eliminated. Corporate Finance is also involved in providing core information that is utilised in the preparation of the Necsa Group's Annual Financial Statements.

Financial Compliance and Reporting

The financial compliance and report by department include: timeous preparation of management accounts for Executive Management meetings (EXCO), quarterly reports to the Department of Energy and National Treasury, and the preparation of Consolidated Necsa Group's Annual Financial Statements (AFS). The AFS are prepared in compliance with; Treasury Regulations, International Financial Reporting Standards (IFRS), Public Finance Management Act (PFMA), Companies Act and other relevant legislation and practices.

The costing and registering of projects in the Enterprise Resource Planning (ERP) system resides in this department. This includes, but is not limited to, tracking and reporting on the projects that are registered. Compliance responsibilities include tracking and reporting on; fruitless and wasteful expenditure, irregular expenditure and unauthorised expenditure, as well as loss register to mitigate and prevent recurrence. These expenditures are by line management and Reports are compiled for the Board of Directors through the Audit and Risk Committee.

An annual highlight of this department is the planning, co-ordination and execution of the year-end reporting and audit by the Auditor-General of South Africa (AGSA) leading to the publication of the Necsa Group's Annual Financial Statements, (see page 135) of the Annual Report. Internal and external audit findings are tracked, followed up on, and reported to the Audit and Risk Committee of the Necsa Board.

Contributions to financial planning include co-ordination of the company budget as well as preparation of company and group financials for inclusion in the Corporate Plan that is submitted at the end of February in each year. The mandatory National Treasury Templates are prepared and submitted to the National Treasury by this department during July and December of each year.

This department is responsible for providing professional advisory financial services to Necsa to ensure that Necsa works within all the compliance and legislative parameters.

Financial Systems

The Corporate Finance Department maintains the full integrity of the Enterprise Resource Planning (ERP) and Payroll systems for Necsa and its major subsidiaries i.e. NTP Radioisotopes SOC Ltd (NTP) and Pelchem SOC Ltd (Pelchem) and to some extent AEC Amersham SOC Ltd. This is accomplished through acting as system administrators and first line user support, overseeing software change control, and performing of software quality control. User access control policy and procedures are also managed. The largest current financial systems project is the integration of Necsa's ERP system with the Central Supplier Database of National Treasury, and the upgrade of the ERP System to the latest version.

Supply Chain Management

The Supply Chain Management (SCM) Department develops relevant policies and procedures while also managing compliance with these policies and procedures, legislation and codes of good practice. In addition, SCM provides Contract Management and Enterprise and Supplier Development support.

Procurement Spend in 2018/19

Area	Value
Intra-Group Spend (National)	R 375 818 038
National Spend External to Group	R 538 043 466
International Spend (External to Group)	R 129 027 075
Total Group Procurement Spend	R1 042 888 579

Top Suppliers to the Necsa Group

No.	Supplier	Product / Service Rendered	Value	Percentage of Procurement Spend External to Necsa Group
1	Eskom	Electricity	R 67 318 722	10.10%
2	National Nuclear Regulator	Nuclear Licensing	R 51 538 335	7.73%
3	Sasol Oil Fuel Marketing	Fuel	R 26 602 677	3.99%
4	Vergenoeg Mining Company	Raw Materials	R 20 389 528	3.06%
5	Gettinge La Calhene SAS	Hot Cell Components	R 13 984 910	2.10%
6	Aon South Africa (PTY)LTD	Insurance Brokers	R 13 298 060	2.00%
7	Rand Water	Municipal Services	R 10 966 806	1.65%
8	Protea Chemicals	Sulphuric Acid	R 10 538 806	1.59%
	TOTAL		R 214 637 844	32.20%



Broad-Based Black Economic Empowerment Spend

In compliance with the Broad-Based Black Economic Empowerment Act of 2003, Necsa fosters business relationships with companies that include black participation in their business structures. Necsa's Policy for Preferential Procurement from BBBEE Companies is based on the Dti Codes of Good Practice.

BBBEE Procurement Spend Group

Procurement Spend	Value	Percentage of National Procurement Spend
Total BBBEE Spend	R 771 899 379	84.46%
BBBEE Recognition Spend	R 820 587 265	89.79%

Necsa BBBEE Ratings

The annual BBBEE evaluation was undertaken for each entity within the Necsa Group by an independent rating agency accredited by the South African National Accreditation System. Each entity received a rating while a consolidated scorecard was prepared for the Necsa Group.

The Necsa Group was recorded as a level 5 contributor with a BBBEE procurement recognition level of 80%. Areas that require improvement relate mainly to employment equity, skills development and enterprise development. The main reasons for the assessed level 5 contributor level are:

- Spend in the nuclear industry is dominated by outsourced and specialised suppliers; and
- Previous preference regulations only allowed BBBEE influence up to 20 evaluation points (below R1m spend) and 10 evaluation points (above R1m spend).

From 1 April 2017, the new Preferential Procurement Regulations allow for reserving procurement budget for 51% black owned companies. The Necsa target is for 30% of the procurable spend to be with suppliers that are more than 51% black owned.

Necsa Corporate was assessed as a level 4 contributor with a procurement recognition level of 100%. Areas that can be improved relate to employment equity, skills development and enterprise development.

Pelchem SOC Ltd was assessed as a level 6 contributor with a procurement recognition value of 60% and NTP Radioisotopes SOC Ltd was assessed as a level 4 contributor with a procurement recognition value of 100%. Areas that require improvement include employment equity, skills development, enterprise development, and socio-economic development.



Mr Ivan Radebe
Managing Director: Pelchem

MD's OVERVIEW

Pelchem SOC Ltd, a global supplier of fluorine based specialty chemicals, now in its 35th year of operations plays a critical role in the South African economy as the sole producer of fluorochemicals to critical sectors such as the petrochemical, steel, plastic packaging, electronics, and mining industries.

The organization is in the midst of executing its short term strategy. In the prior year, focus was on re-engineering the business and rationalizing product offerings to be responsive to market needs. This year the major focus was on bedding down customer centric culture and rehabilitating the financial health of the organization through initiation of debt-to-equity conversion and

capitalization with the shareholder. The results of increased commercial activation has been order book in excess of R200m and new export contracts signed to supply bulk Fluorine to North America and advanced negotiations to supply electronic grade AHF to Asia.

The production performance remained unsatisfactory and investments are being made into refurbishing the HF and Fluorine plants. The safety record of Pelchem has improved tremendously and I would like to thank everyone for their efforts and collaboration in improving our safety culture.

The development of the State-Owned pharmaceutical company, "Ketlaphela Pharmaceutical SOC Ltd" is near completion and we await final approvals and decisions by government. Furthermore, Ketlaphela Pharmaceutical SOC Ltd has been approached by a large international innovator pharmaceutical company to pursue joint opportunities and this bodes well for the future of Pelchem.

In closing, I would like to thank our shareholder for their continued and unwavering support in this period, to the Pelchem board for their valuable and strategic guidance, our customers, suppliers and our staff, the "Pelichamps" for being enthusiastic agents of change in support of Pelchem's strategic repositioning.

Mr IM Radebe
Managing Director



HIGHLIGHTS & CHALLENGES FOR 2018/19

HIGHLIGHTS

- Successful implementation of the new corporate strategy and organisational structure.
- Supply of product into new markets including Nigeria, Mexico and Singapore.
- Substantial improvement in the Safety & Health record through improved audits, increased safety awareness and supervision.
- Achieved ISO 9001:2015 and ISO 14001:2015 certification according to the 2015 revised standard.
- Conclusion of contract to pilot and produce new EU compliant fluorochemicals coatings.
- Improved pricing policy with all customers.
- Secured new contracts for the exporting of Bulk Fluorine in Tube Trailers.
- Advancements in the purification of HF to supply Electronic Grade into high end markets, namely Refrigerants and the Semiconductor industries.
- Partnership with Services SETA has initiated the Fluorochemicals Centre of Excellence.
- Successful hosting of Fluorspar 2018 conference in Johannesburg.
- Readiness of Ketlaphela to provide ARVs'.

CHALLENGES

- Missed production targets due to aged and sub-economic plants.
- Very high increases of electricity and key raw input materials.
- Poor economic performance in the country and lack of investments in manufacturing in the country.
- Severe drought impacted negatively on our packaging customers.
- Strikes in the packaging sector resulted in a reduced demand for fluorination services.
- Limited talent pipeline.

PELCHEM PROFILE

Pelchem SOC Ltd "Pelchem", is a world-class producer and supplier of fluorochemicals and competes with multinationals companies from the United States, Europe, Japan, and China amongst others. Pelchem is the sole manufacture and supplier of fluorochemicals in the Southern Hemisphere and has been in operation for over 35 years.

Pelchem's core mandate is to:

- Manufacture and supply of fluorochemicals for local and global markets, and
- Retain, maintain critical technology, Intellectual Property (IP) and strategic capabilities and skills relating to production of Fluorochemicals.

Our Vision

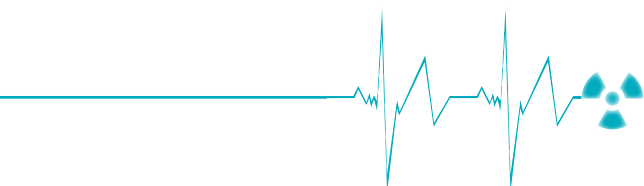
Global Manufacturer and Supplier of Commodity and Specialty Chemicals

Our Mission

- To be the preferred supplier of commodity and specialty chemicals.
- Deliver on our promises, safely and in an environmentally responsible manner.
- Driving growth through Excellence, Innovation, Performance and Customer Focus.
- Deliver world class products and services reliably.

Our Values

- Safety – We put safety first and strive towards zero harm.
- Integrity – We are ethical and trustworthy in our relationships with all stakeholders.
- Innovation – We anticipate change and respond with creative solutions.
- Reliability – We deliver quality products and services as agreed upon in a consistent manner.
- Excellence – We deliver what we promise and add value that goes beyond what is expected.





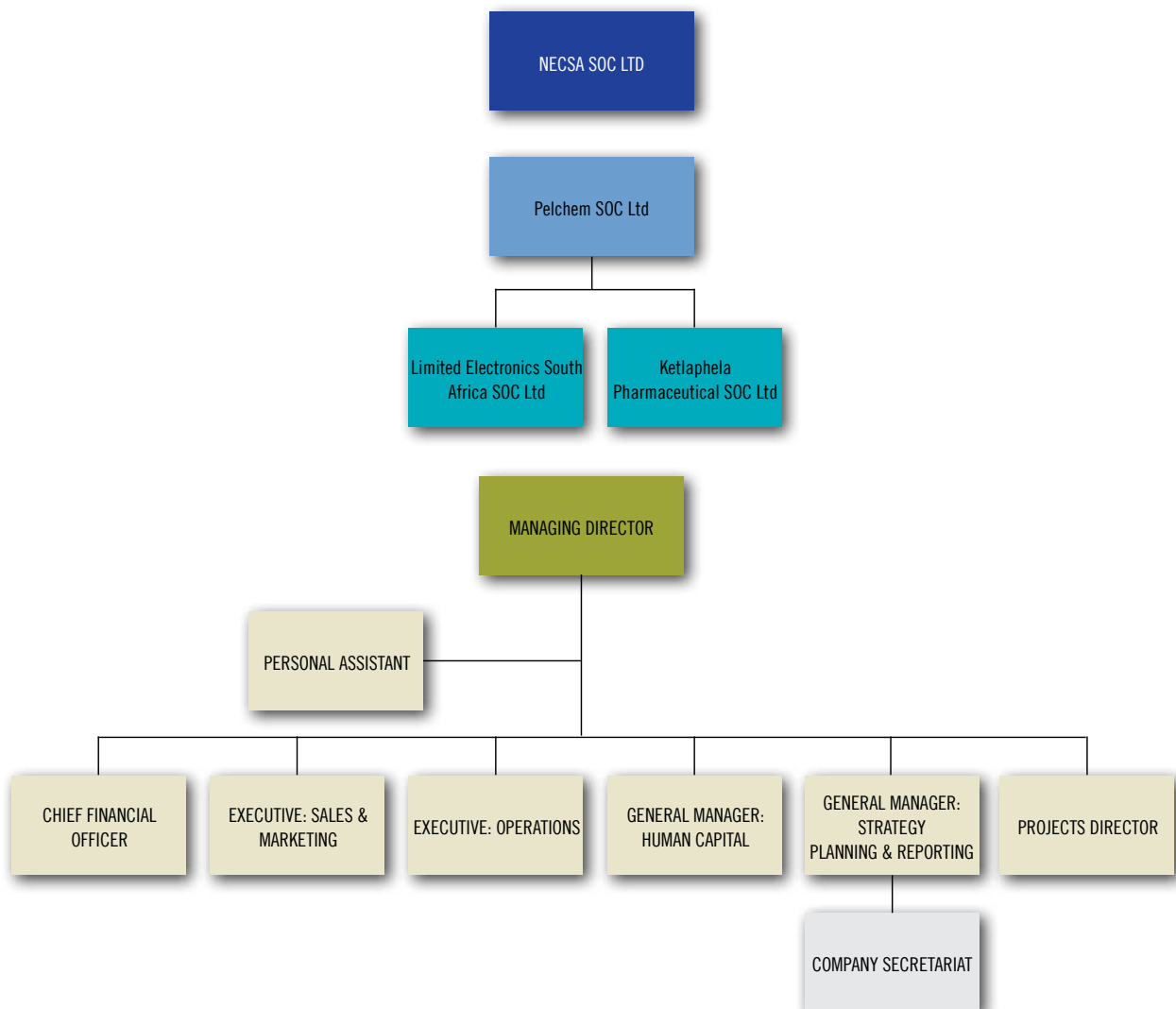
beneficiation of South African mined fluorspar of which the country has the largest reserves in the world.

Pelchem's production facilities are operated with its own proprietary technologies protected by patent, trade secret, or trade mark. Pelchem is also a critical incubator and supporter of cutting edge Research & Development (R&D) supporting the University of Pretoria, University of KwaZulu-Natal, and Necsa R&D through the Government funded Fluorochemicals Expansion Initiative (FEI).

ORGANISATIONAL STRUCTURE

Pelchem has two (2) subsidiaries:

- Ketlaphela Pharmaceutical SOC Ltd – to manufacture and supply of essential medicines (for HIV/AIDs, TB, Malaria),
- LESA SOC Ltd – Sales & Marketing of fluorochemicals.





Ms Tina Eboka
Managing Director: NTP

MD'S OVERVIEW

NTP Radioisotopes SOC Ltd remains an integrated manufacturer, processor and supplier of commercial reactor- and cyclotron-based radioisotopes and other nuclear technology products and services. We are one of four key global producers of fission Molybdenum-99 (Mo-99), which is the most important diagnostic medical radioisotope in the world. NTP is committed to ensuring the sustainable and reliable supply of this essential Active Pharmaceutical Ingredient (API).

From November 2017 NTP was adversely affected by a series of unplanned shutdowns of our isotope processing facilities. The extended period of disuse and other interim changes made during this time necessitated that, from August 2018, the plant had to be returned to its original design principles before any production could resume. The facility is operated under licence from the National Nuclear Regulator, and the licencing conditions require NTP's operations to be conducted in a manner that ensures the safety not only of our personnel but also the environment, and of our product.

Our staff are focused and aligned to NTP's commitment to safety as part of ensuring a sustainable return to service. Many of our policies and Standard Operating Procedures have been updated in line with this, and the NTP Board has approved safety, quality and environment policies which staff have endorsed. To this end, our staff continued to attend weekly safety presentations as part of our enhanced safety management programmes. In November 2018 NTP was authorised to start Functional Testing and resume readiness runs.

Despite the financial challenges during this period, NTP continued to make strategic investments on critical safety programmes and Capex that supported this. We also invested in ensuring that our staff received appropriate training.

With the support of our shareholder, Necsa, and its Board and Executives, the Department of Energy, the NTP Board, the National Nuclear Regulator, and all of NTP's staff, we have worked to remain an essential roleplayer in the sustainable and reliable supply of critical medical radioisotopes.

A handwritten signature in black ink, reading 'Tina Eboka', written over a horizontal line.

Ms Tina Eboka
Managing Director: NTP



NTP Radioisotopes SOC Ltd is a wholly owned subsidiary of Necsa and is based at Pelindaba. NTP operated as a division of Necsa from the early 1990s and was incorporated as a limited liability company in October 2003.

Pelindaba has produced small volumes of medical radioisotopes since 1973, initially to supply the South African nuclear medicine market. In the 1990s this scheme was commercialised and the hot cell complex previously used for nuclear fuel testing was converted into radiochemical production facilities. The first export orders for the key medical radioisotope Molybdenum-99 were shipped in 1994.

NTP has grown to become one of the world's leading suppliers of medical radioisotopes and is one of the key global producers of Molybdenum-99.

NTP is a pioneer in the integrated use of medical radioisotopes, making South Africa a hub of nuclear medicine excellence on the African continent. In 1989 NTP began producing and distributing its own high-yield Technetium-99m generators, used by nuclear medicine practitioners. In 2005 the company also began to produce on-site cyclotron-based FDG F-18, which is used for cancer diagnosis. Following the successful conversion of the SAFARI-1 Research Reactor core to low-enriched uranium (LEU) fuel in 2009, in 2010 NTP became the first large-scale producer to offer commercial all-LEU based Mo-99 and Iodine-131, in which both the fuel and the targets were LEU-based. In 2012, NTP began the first African-based production of the beta-emitter Lutetium-177 n.c.a., which has diagnostic and therapeutic applications. NTP later facilitated the first medical procedure in South Africa using Lu-177 no-carrier added labelled with prostate-specific membrane antigen (PSMA) for the treatment of prostate cancer.

NTP GROUP SUBSIDIARIES

AEC-Amersham SOC Ltd

AEC-Amersham is the African and Indian Ocean Islands region distributor for NTP radiopharmaceutical products, a range of life science products and service offerings. The company is ISO 9001 certified and complies with all regulatory requirements that enable the company to import and export its products.

NTP Logistics SOC Ltd

NTP Logistics provides bespoke end-to-end supply chain logistics services specialising in the global distribution of all classes of hazardous goods, time-sensitive, temperature-sensitive, and high-value goods offering a full spectrum of land, air and sea solutions. The company is a market leader with experience in national and international regulatory requirements. NTP Logistics holds permits and licences from the National Nuclear Regulator, Department of Energy, Department of Health, and the Department of Transport. The company maintains ISO 9001 certification.

Gammatec NDT Supplies SOC Ltd

Gammatec NDT Supplies SOC Ltd is a supplier, distributor, manufacturer, and turnkey solution provider of non-destructive testing equipment, accessories and consumables. Technologies provided include acoustic emission, ultrasonic, phased array, visual inspection, dye penetrant, eddy current, magnetic particle, as well as radiography sources such as Iridium-192, Caesium and Selenium. The company is ISO 9001 accredited.

Gammatec NDT Supplies SOC Ltd exports to over 70 countries with a focus on Africa, the Middle East, Southeast Asia, and Australasia. In 2018 a strategic decision was made to close its subsidiaries in Dubai and Kuala Lumpur and focus on supporting customers through its distribution network and direct contact. Gammatec's equity associate, Oserix SA, based in Belgium, services the gamma radiation isotopes market in Europe, North Africa, and the Americas.

Gamwave (Pty) Ltd

NTP Radioisotopes is a minority shareholder (40%) of Gamwave Pty Ltd, which provides irradiation and gamma sterilisation services for agricultural, food, and medical sectors.

Global Supplier of Radiopharmaceuticals

The NTP Group is one of the leading global suppliers of radiation-based products, solutions, and services for the healthcare, life sciences, and industrial sectors. Isotopes like Molybdenum-99 (Mo-99) support the practice of nuclear medicine, while radioactive sealed sources are used in applications such as non-destructive testing.



Through NTP, the Necsa Group is a key producer of critical medical radioisotopes that are used to diagnose diseases such as cancer. During the 2018/19 financial year, NTP's production and revenue were adversely affected following an extended shutdown of operations from November 2017. Limited production recommenced in November 2018.

NTP has many unique and valuable assets, which include facilities, skills, expertise, intellectual property and infrastructure. In order to ensure that its legacy is not only preserved, but is passed on to future generations, NTP has developed and invested in strategies and programmes that will ensure its business continues to grow in a way that is organic and sustainable.

Highlights

- The Cyclotope facility (P2000) was audited by the South African Pharmacy Council in January 2019 and received an A-Grade certification after scoring over 96%.
- Environmental releases during 2018/19 were low and well below regulatory limits.
- The total effective dose to all NTP radiation workers remains well below the regulatory limits.
- During the Oak Ridge National Laboratory "Changing Behaviour" workshops held in November 2018 96% of NTP staff participated.
- The Dekra surveillance inspection for ISO9001:2015 was held in December 2018 and no findings were noted. NTP received a fully clean ISO9001 audit.

- Intensive validations were done on the Beatrice and Jane transport packages by the UK Office for Nuclear Regulation (ONR), the Australian Radiation Protection, and Nuclear Safety Agency (ARPANSA), especially with regard to ageing analysis. The validation approvals were received in November 2018 and are valid until January 2023.

Challenges

NTP has experienced continued and unplanned halts to radioisotope production. NTP is working closely with Necsa and the National Nuclear Regulator to successfully resolve the underlying issues within NTP; however the stoppages have had serious financial implications for NTP and have continued to damage the company's brand and reputation. A Safety Culture Advisor has been appointed as well as a Safety Culture Enhancement Committee.

NTP Transport Containers

During the past year, analysis support to SAFARI-1 was particularly directed to improved reactor core-follow, core-design, and core reload analysis. Additionally, RRT established for the first time a reactor thermal analysis capability to complement the neutronics work. This allows RRT to be a full service offering with regard to both reactor operational and safety analysis support.







7

Human Resources and Real Estate Management

INTRODUCTION

The primary mandate of the HR and Ream division is to provide strategic Human Resources support services that should enable Necsa to build organisational capabilities to achieve its strategic objectives and thereby deliver on its mandate.

The human resources strategy and strategic programmes which stems from it are therefore aligned to, and geared towards supporting achievement of Necsa's strategic objectives. The main human resources activities that were implemented during the reporting period are presented below.

OVERVIEW

Key Human Resources Challenges

The biggest Human Resources challenge faced by the organisation is the ability to achieve transformation, while ensuring that the salary bill does not increase. This inhibits the organisation's ability to aggressively bring in young black talented recruits in certain key areas of the organisation where diversity is lacking.

Another challenge is that Necsa's workforce is also ageing, thus posing a serious risk of knowledge loss which calls for effective measures to be put in place to manage that risk. To that end, it has become critical that a talent management framework is developed and implemented to attract, retain, and develop the young workforce that will take this organisation forward.

HR priorities for the year under review

Against the challenges and opportunities identified, the following high level HR priorities were embarked on to create the platform for Necsa to achieve its strategic objectives:

- Implementation of Career Ladders;
- Developing and rolling out programmes for creating awareness to facilitate effective implementation of talent management;
- Developing and implementing programmes to ensure a performance management culture is fully embedded within the organisation;

- Development and roll out of a group model in terms of which Necsa and its subsidiaries function within the context of a group; and
- Development and implementation of programmes for creating an environment that is conducive to sound employee relations and wellness.

Workforce planning framework and key strategies

Work force planning is seen as one of the critical cornerstones of good Human Resources Management, and plays a vital role in determining capacity for both current and future Human Resources requirements for the organisation. To that end, Necsa embarked on a campaign to inculcate a culture of ensuring the alignment of workforce planning with the organisation's overall planning cycle in the form of Medium Term Expenditure Framework (MTEF). This was to ensure that workforce planning is conducted as part of strategic planning to inform capacity requirements for the execution of the strategic priorities. The framework for identification of critical role was developed as a model for assessing the criticality of every role within the organisation using the Necsa's value creation framework to plot every role on the mapping chart.

Employee performance management framework

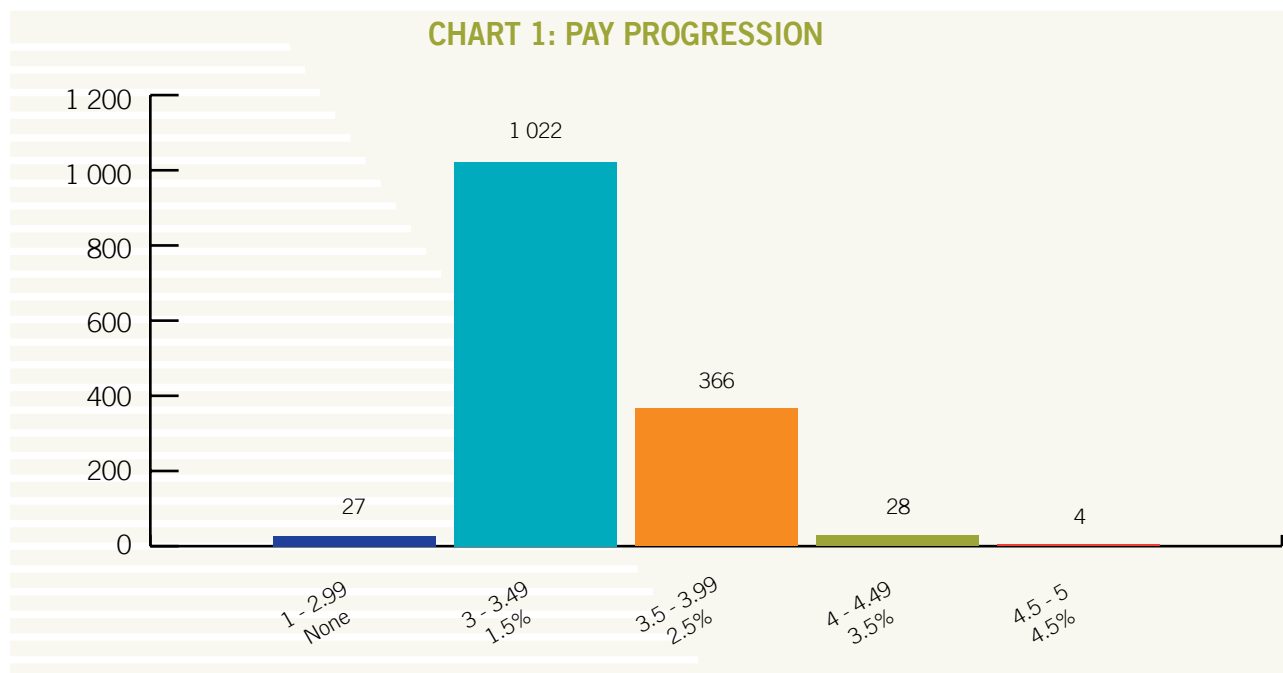
The achievement of Necsa's strategic objectives is dependent on individuals and groups achieving results that are directly linked to its overall strategic objectives. Performance management provides a framework for managing the performance of all employees within Necsa in order to ensure a fair, equitable, and transparent process that instills a culture of high performance. To that end, the primacy of performance management was articulated in the sessions that were held across the organisation through workshops to ensure that the momentum is maintained.

To create a link between reward and performance, thereby promoting a culture of high performance, a pay



progression model was introduced for the first time during the reporting period. This provided the organisation with an objective instrument for use in ensuring that employees progress within their salary band through pay progression calculated as a percentage of their total remuneration package based on the performance score obtained. The introduction of pay progression is an effective way of addressing the problem where most employees have actually stagnated at the minimum of their salary band for many years as there was no objective instrument in place to facilitate their progression.

The distribution of employees who benefited from pay progression that was implemented effective from 1st October 2018 per each of performance level and the associated payment quantum is reflected in Chart 1 below. This information excludes Senior Management and Executives who were not included in the roll out of pay progression for this period.



Employee wellness programmes

Apart from being a business imperative due to the nature of its operations, Necsa's approach to employee wellness is anchored on its belief that there is a direct correlation between productivity and the well-being of its employees.

Accordingly, Necsa has adopted an integrated Employee Wellness Programme involving continuous medical surveillance on occupationally exposed workers against high risk exposures such as radiation, noise and chemicals, assisting employees to identify and resolve personal or work related problems, providing emotional assistance and support interventions to employees.

Some of the strategies used were to organize health and wellness events such as a Corporate Wellness Day to promote health and increase awareness on

lifestyle conditions such as Diabetes, Hypertension and Cholesterol, including HIV Counseling and Testing Campaign, World AIDS Day, Condom and reproductive health awareness week, and Mental Health Awareness Campaign, to name a few.

The organisation also has in place a comprehensive occupational hygiene monitoring programme to meet the requirements of the Occupational Health and Safety Act, Act 85 of 1993.

Necsa Group Staff Composition for the year ended 31 March 2019

Necsa's total staff complement inclusive of contract workers as at 31st March 2019 was one thousand nine hundred (1900). Of this, one thousand eight hundred forty four (1844) were permanent employees while fifty six (56) were contract workers.

Table 1 below reflects the breakdown of staff complement per each of the occupational categories for the financial year that ended on 31 March 2019

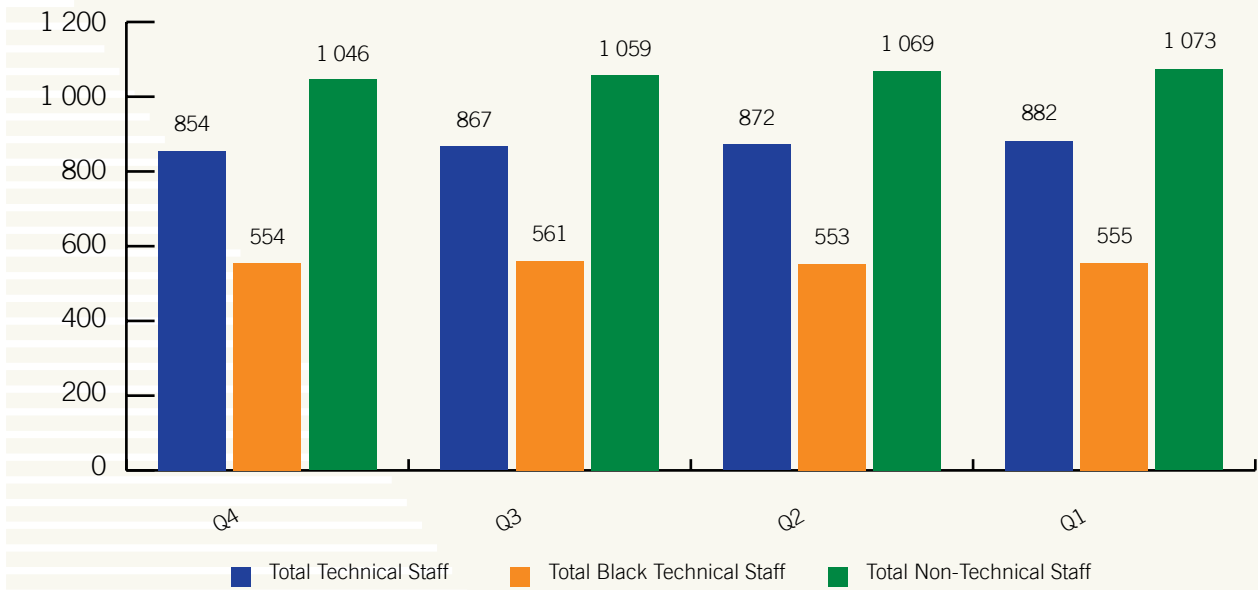
Table 1: Necsa Group Staff Composition for the Year Ended 31 March 2019

Job Category	Total	Black	White	Male	Female
Management (Non-Techn)	47	37	10	21	26
Management (Techn)	80	49	31	60	20
Engineers	51	33	18	37	14
Scientists	111	67	44	77	34
Prof: Technologist/TO/RPO	54	22	32	46	8
Other Professionals	61	45	16	30	31
Supervisors (Non-Techn)	45	32	13	34	11
Supervisors (Techn)	53	26	27	48	5
Operators (Non-Techn)	89	71	18	83	6
Operators (Techn)	122	108	14	116	6
Artisans	104	58	46	95	9
Technicians	151	121	30	75	76
Skilled: Technical (IT)	25	20	5	18	7
Skilled: Technical (TO)	35	10	25	32	3
Skilled: Technical (RPO)	38	21	17	25	13
Other Skilled	327	229	98	139	188
Semi-Skilled	278	247	31	169	109
Unskilled	173	171	2	65	108
Contract Staff (Techn)	30	19	11	25	5
Contract Staff (Non-Techn)	26	22	4	10	16
Grand Total	1 900	1 408	492	1 205	695

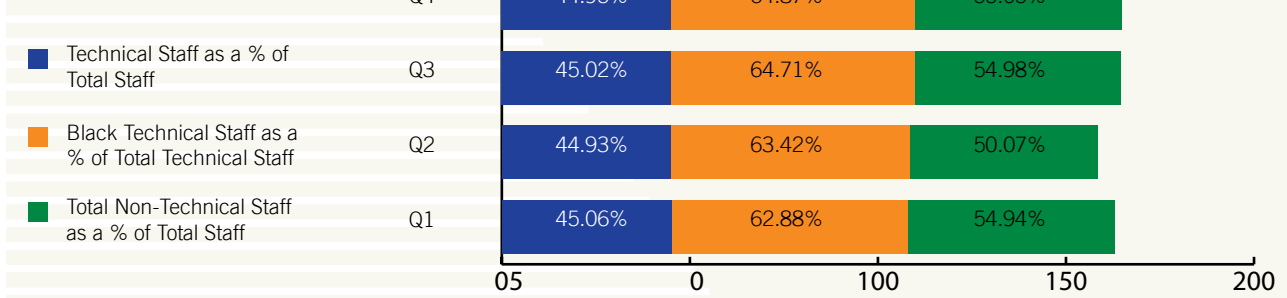
One of the predetermined objectives that Necsa has committed to achieve is to ensure that its staff complement is constituted by a bigger proportion of technical staff relative to support staff. Chart: 2 below shows that the percentage of Technical staff relative to that of total staff was **44.95%**, while Black Technical staff as a percentage of total technical staff was **64.87%** as at the end the fourth quarter. Year to date figures for technical staff relative to total staff and black technical staff relative to all technical staff is **45% (target 46,05)** and **64% (target 63%)** respectively while the comparative figures for the previous financial year were **45%** for technical staff relative to total staff and **65%** for black technical staff relative to all technical staff.



CHART 2: TECHNICAL STAFF

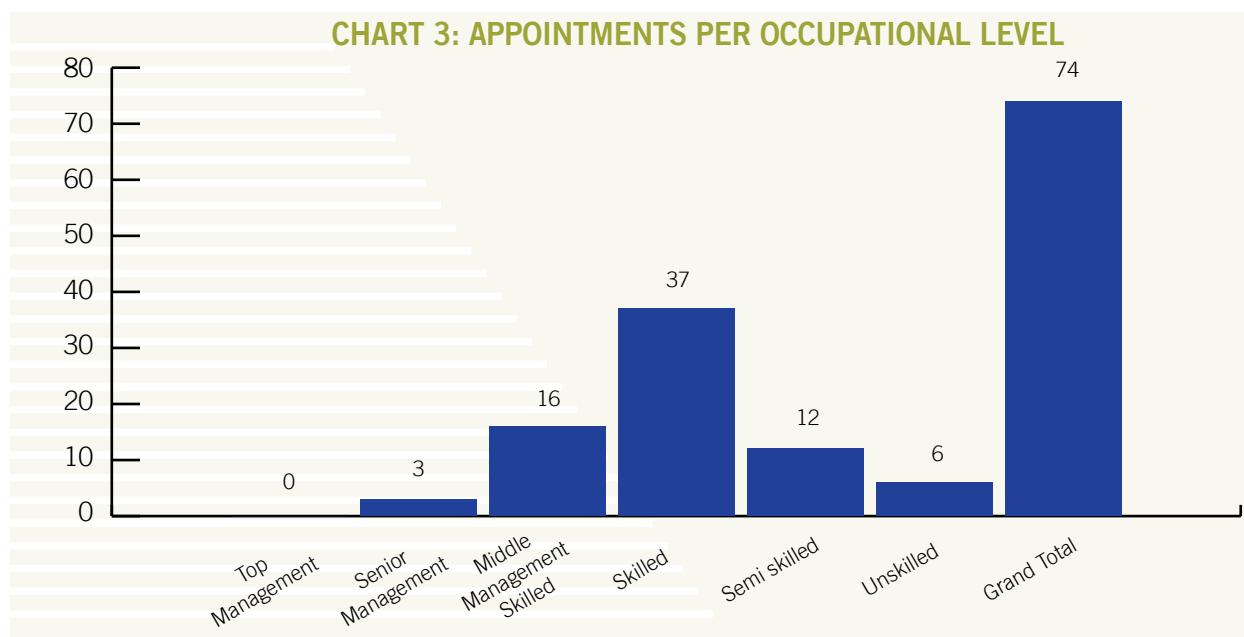


% of TECHNICAL STAFF



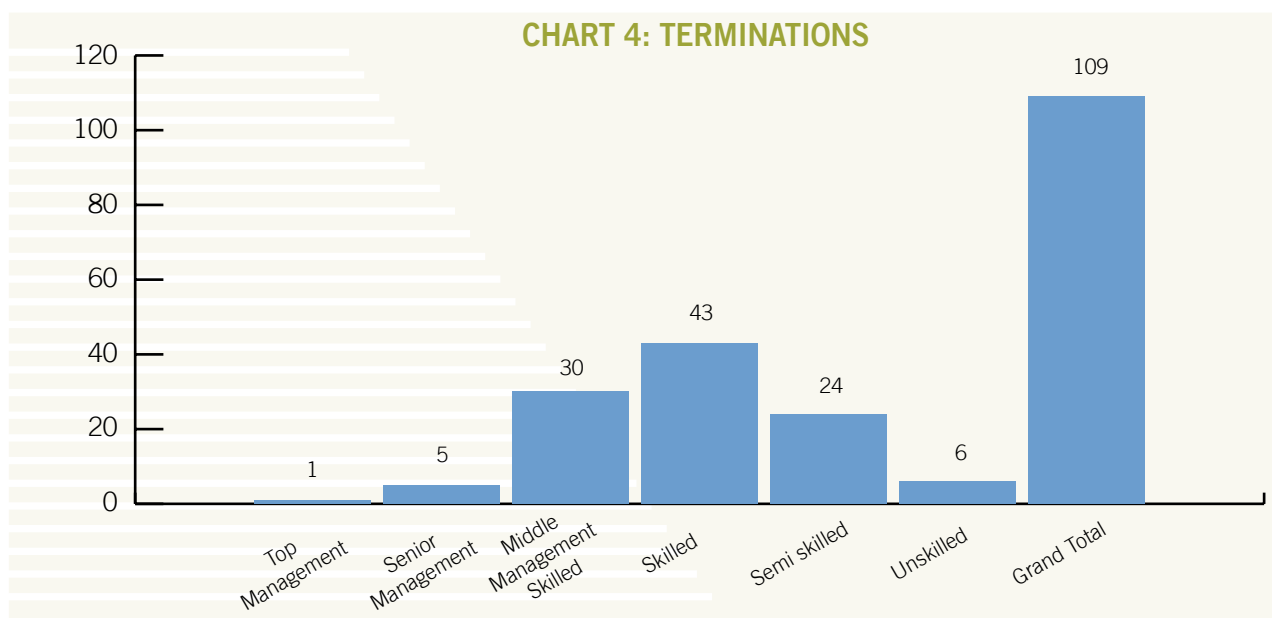
Appointments

A total of seventy four employees (74) were appointed within the Necsca Group during the year under review. This information is depicted graphically per occupational level in chart 3 below.



Terminations

The Group lost a total of one hundred and nine employees (109) during the year under review. This information is depicted graphically per occupational level in chart 4 below. Overall Staff turnover rate for the year is 5.84%.



STAFF FINANCIAL STATISTICS

Remuneration

Necsa treats remuneration as a strategic tool to achieve its strategic objectives. Among the myriad of ways is that Necsa uses remuneration as a strategic tool through which it competes for talent while at the same time aligning its staff to the organisational culture of promoting and rewarding high performance, thereby ensuring sustainability of the business. Necsa pays all its employees a guaranteed package based on the total cost to company principles.

Necsa therefore sees it as a business imperative the need to maintain fair and competitive remuneration consistent with sector practices and all necessary regulations and Collective Agreement governing employees. To that end, Necsa's total remuneration packages are benchmarked with that of the external market using reputable survey houses with valid and reliable data and uses the information as input for constructing its pay structures which are differentiated in line with its assessment of the criticality of the different job categories.

The Necsa Board's Social and Ethics Committee, details of which are reported in the Corporate Governance section of this report, oversees the principles for remuneration of Executive employees. Implementation is managed through the Human Resources Department and with pay delivery being done by Finance and Business Development Division.

Adjustments to the remuneration of Executive Directors are recommended by the Social and Ethics Committee and are approved by the Board of Directors. Remuneration of Executive Directors is disclosed under Note 33 in the Financial Statements.

Table 1: Personnel Cost by Division

Division	Total Expenditure for the Entity (R'000)	Personnel Expenditure (R'000)	Personnel Expenditure as Percentage of Total	Number of Employees	Average Personnel Cost per Employee (R'000)
Office of the CEO	96 400	50 862	53%	65	782
Research and Tech Development	167 430	100 558	60%	151	666
Corporate Services	171 303	73 538	43%	333	221
Finance Information Management	113 395	71 158	63%	118	603
Nuclear Compliance Services	465 231	197 768	43%	377	525
Pelindaba Enterprises	169 518	87 655	52%	211	415
Operations	518 521	195 950	38%	353	555
Total	1 701 798	777 489	46%	1 608	484



Table 2: Personnel Cost by Salary Band

Job Category	Personnel Expenditure (R'000)	% of personnel exp. to total personnel cost (R'000)	No. of employees	Average personnel cost per employee (R'000)
Top Management	23 190	2.25%	8	2 899
Senior Management	61 797	6%	35	1 766
Professional Qualified	313 160	30%	306	1 023
Skilled	429 408	42%	900	477
Semi-skilled	100 519	9.8%	399	252
Unskilled	37 389	3.6%	193	194
Contract	64 255	6.2%	59	1089
TOTAL	1 029 718	100.00%	1,900	

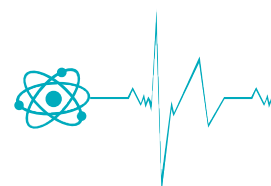
Table 3: Training Costs

Directorate/ Business Unit	Personnel Expenditure (R'000)	Training Expenditure (R000)	Training Expenditure as a % of Personnel Cost.	No. of employees trained	Avg training cost per employee (R)
Office of the Group CEO	46 989	222	0.47%	58	3828
Research and Technology Development	103 741	2 330	2.25%	120	19417
Human Resources and REAM	77 961	4 326	5.55%	205	21102
Finance	62 237	194	0.32%	203	956
Nuclear Compliance Services	185 055	401	0.22%	369	1087
Pelindaba Enterprises	90 393	667	0.74%	152	4388
Operations	190 247	1 013	0.53%	350	2894
NTP	215 721	2 277	1.06%	392	5809
PELCHEM	57 375	201	0.35%	140	1436
	1 029 718	11 631	1.13%	1,900	6122

Retirement Fund

As part of its employee value proposition, Necsa has in place a Retirement Fund in the form of a defined contribution provident fund called Momentum Funds At Work Umbrella Provident Fund administered by Momentum. The Necsa Retirement fund offers two investment options, namely, a Necsa default portfolio called life stage model and a member elected allocation (member choice) from which members can switch in and out on a monthly basis at no cost.

The life stage model is as a default portfolio which switches from funds with more aggressive investment portfolios for those who are still far from retirement age, to more conservative and ultimately defensive as members approach retirement age. The life stage portfolios ranges are the Necsa mapped life stages portfolio and Momentum life stages portfolios.



The life stage philosophy uses term to retirement as a proxy for the risk a member is able to adopt and therefore the asset class in which a member's funds are invested would differ based on their remaining period to retirement. For Necsa mapped life stages portfolio, a default portfolio is 7 years retirement 100% enhanced factor 5 portfolio which targets CPI + 5% investment growth.

STAFF SOCIAL STATISTICS

The organisation has a total of two hundred and forty two vacancies (242) as at 31st March 2019. Of these, three were Top Management, thirteen at Senior Management level, and the remaining vacancies are spread across the remaining occupational levels with a significant portion thereof concentrated at skilled levels. The overall vacancy rate for the group is 11.62%, which, while it is relatively on the higher side, it certainly reflects the effect of the austerity measure in the form of moratorium on filling of vacancies that were in place throughout the year to contain the wage bill.

Table 4: Employment and Vacancies

Job Category	2018/2019 Approved Posts	2018/2019 No. of Employees	2018/2019 vacancies	% of vacancies
Top Management	11	8	3	27.3%
Senior Management	48	35	13	27.1%
Professional qualified	375	306	69	18.4%
Skilled	1026	900	126	12.3%
Semi-skilled	424	399	25	5.90%
Unskilled	199	193	6	3.02%
Subtotal	2083	1844	242	11.62%
Contract	-	56	0	
GRAND TOTAL	2083	1,900	242	11.62%

Employment Changes

As seen from table 5 below, a total of one hundred and nine (109) employees left the organisation through a combination of normal retirement, resignations, dismissals, and deaths during the financial year. Of this figure, about sixty six (66) were from members of designated group while the rest were mainly whites. The overall staff turnover rate for the year, which includes avoidable and non-avoidable termination, was 5.84% which is relatively moderate level of attrition rate.

In contrast to terminations, and also in line with the austerity measures that were put in place, only seventy four (74) appointments were made for the entire year, some of which were internal promotions where existing staff were appointed to high level positions. Worth noting is that about seventy seven percentage (77%) of those were employees from the designated group in line with the transformation imperatives. The information is presented graphically in chart five (5) below with details also reflected in table seven (7).



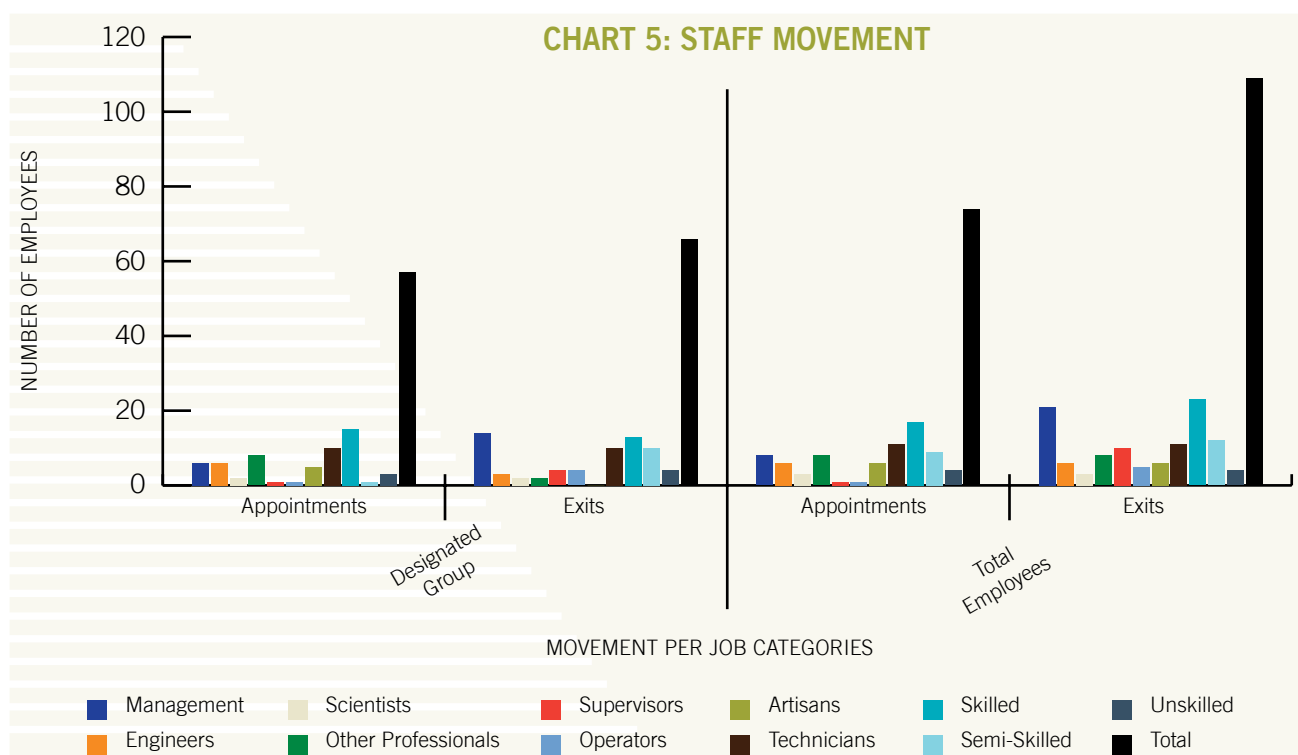


Table 5: Changes in Employment over the Financial Year

Job Category	Designated Group		Total Employees	
	Appointments	Exits	Appointments	Exits
Management	6	14	8	21
Engineers	6	3	6	6
Scientists	2	2	3	3
Other Professionals	8	2	8	8
Supervisors	1	4	1	10
Operators	1	4	1	5
Artisans	5		6	6
Technicians	10	10	11	11
Skilled	15	13	17	23
Semi-Skilled	1	10	9	12
Unskilled	3	4	4	4
Total	57	66	74	109



Table 6: Staff Turnover in Critical Skills Categories

Job Category	2018/19 %	2017/18 %	2016/17 %	2015/16 %	2014/15 %
Management	1.90%	1.17%	0.62	0.12	0.42
Engineering and Science	0.49%	0.71%	0.26	0.65	0.77
Technical	0.87%	1.33%	0.31	0.30	4.02

Table 7: Reasons for Staff Leaving

Reason	Number	% of total no. of staff leaving
Death	13	11.93%
Resignation	58	53.2%
Dismissal	5	4.59%
Retirement	28	25.69%
Ill health	1	0.92%
Disability	4	3.67%
Retrenchment	0	0.0
Total	109	100%

Labour Relations

Table 8: Misconduct and Disciplinary Action

Nature of Disciplinary Action	Number
Verbal Warning	0
Written Warning	2
Final Written warning	1
Dismissal	5

Table 9: Disciplinary Hearings, Grievances and Sick Leave

Description	2018/19	2017/18	2016/17	2015/16	2014/15
Disciplinary Actions	16	10	6	27	34
Grievances Registered	31	23	24	186	24
Sick Leave (days per person per month)	0.14	0.63	0.69	0.64	0.65



Table: 10 Labour Union Membership

Unionised	2018/19		2017/18		2016/17		2015/16		2014/15	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pelindaba Workers Union	257	20.95%	300	23.96%	326	26.2%	341	27.72%	369	29.2%
Solidarity	62	5.05%	75	5.99%	81	6.5%	92	7.4%	114	9.0%
National Education, Health and Allied Workers Union (NEHAWU)	761	62.02%	694	55.43%	647	51.9%	606	49.26%	544	43.07%
Sub-total	1080		1069	85.38%	1054	84.6	1,039	84.38%	983	81.3%
Non-unionised	147	11.98%	183	14.61%	191	15.52%	191	15.52%	236	18.7%
Total	1227	100%	1252	99.99%	1245	99.99%	1230	99.99%	1,263	99.99%

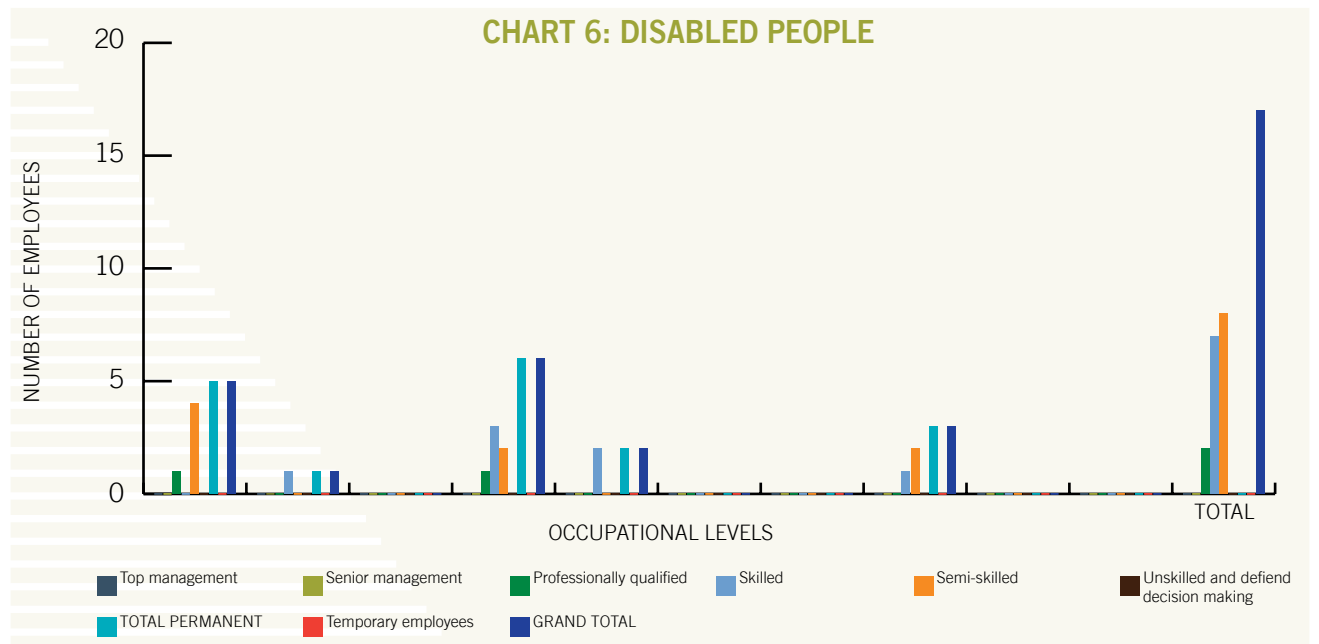
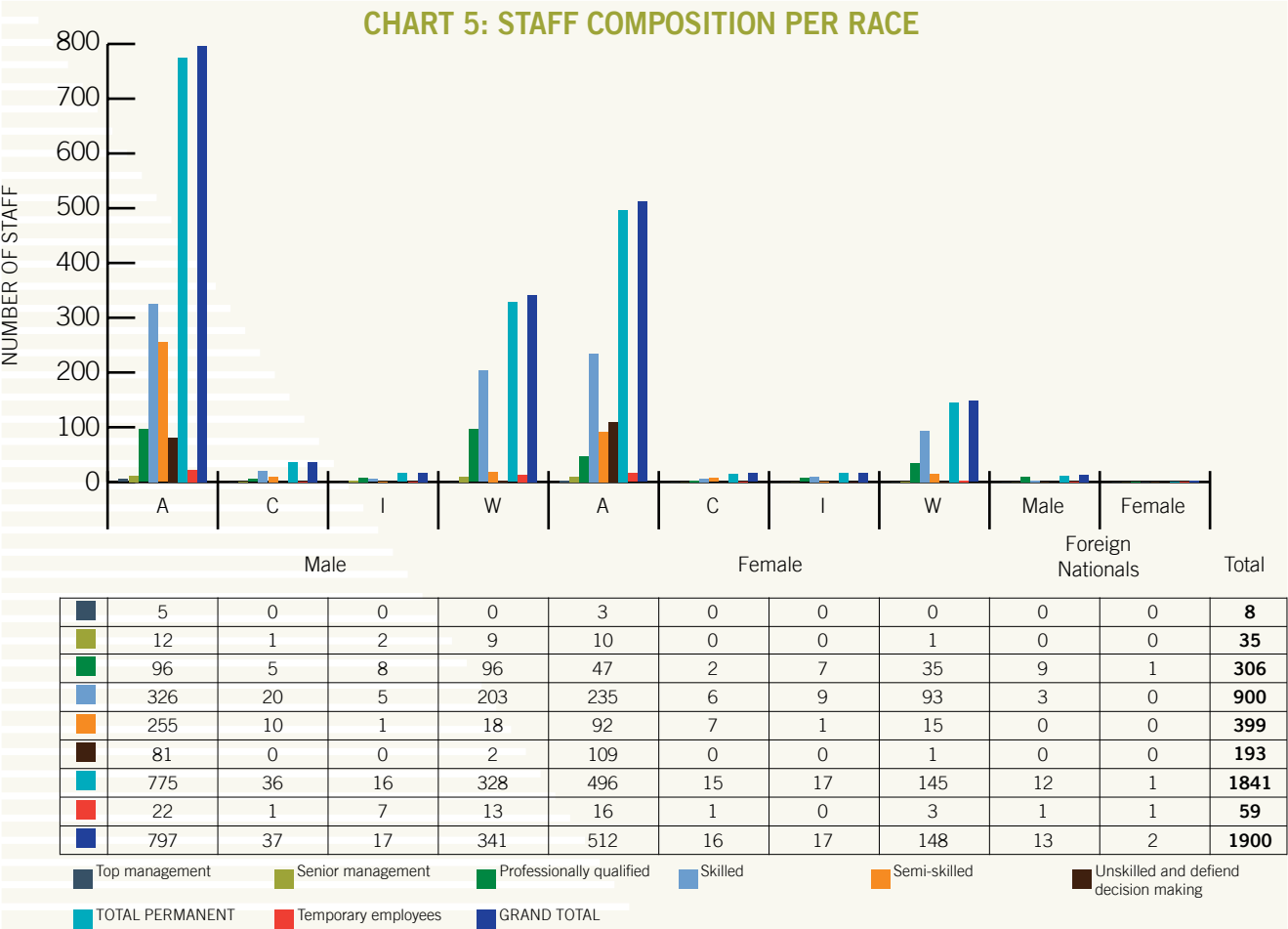
Employment Equity

In developing Necsa's Employment Equity (EE) Plans, the Economically Active Population (EAP) analysis was used to determine the degree of underrepresentation of the designated groups in our workforce profile. The EAP targets are used to set our numerical goals and targets in order to achieve an equitable and representative workforce.

The information is presented in accordance with the requirement of section 22 of the Employment Equity report which enjoined every designated employer to publish a summary of their Employment Equity report in the annual report. Necsa Group staff compliment, inclusive of people with disabilities is presented in Chart 5 below. Discernible from the information is that, male representation relative to total staff compliment of one thousand nine (1900) is 62.74% while females are 36.58%. Top Management remains predominantly male dominated with males constituting 62.5% of employees for this occupational level. With regard to distribution by race, Blacks, excluding foreign nationals, constitute 73, 5% of the staff complement.



Chart 6: Necsa Group employees, including people with disabilities



Necsa Study Assistance Scheme

Necsa established SAS to assist employees who want to develop themselves and further their studies by obtaining qualifications from various institutions of higher learning. During the 2018/19 financial year, a total of **R2 638 256.85** was spent on the Study Assistance Scheme (SAS) to assist **146** Necsa staff in obtaining qualifications at various institutions of higher learning.

Table 12: Study Assistance Scheme

Discipline	Black		Coloured		Indian		White	
	Male	Female	Male	Female	Male	Female	Male	Female
B A Degree	2	1	0	0	0	1	1	0
B Com	3	7	0	0	0	0	1	0
B Tech	12	6	0	0	0	0	0	0
BSc	0	2	0	0	0	0	1	0
Honours	2	6	1	0	0	0	0	1
LLB	0	2	0	0	0	0	0	0
M Tech	2	1	0	0	0	0	0	0
Masters	2	0	0	0	0	0	0	0
MBA	1	3	0	0	0	0	0	0
MSc	3	5	0	1	0	0	0	0
National Diploma	29	25	2	1	0	0	2	4
PhD	9	3	0	0	1	0	1	2
TOTAL	65	61	3	2	1	1	6	7

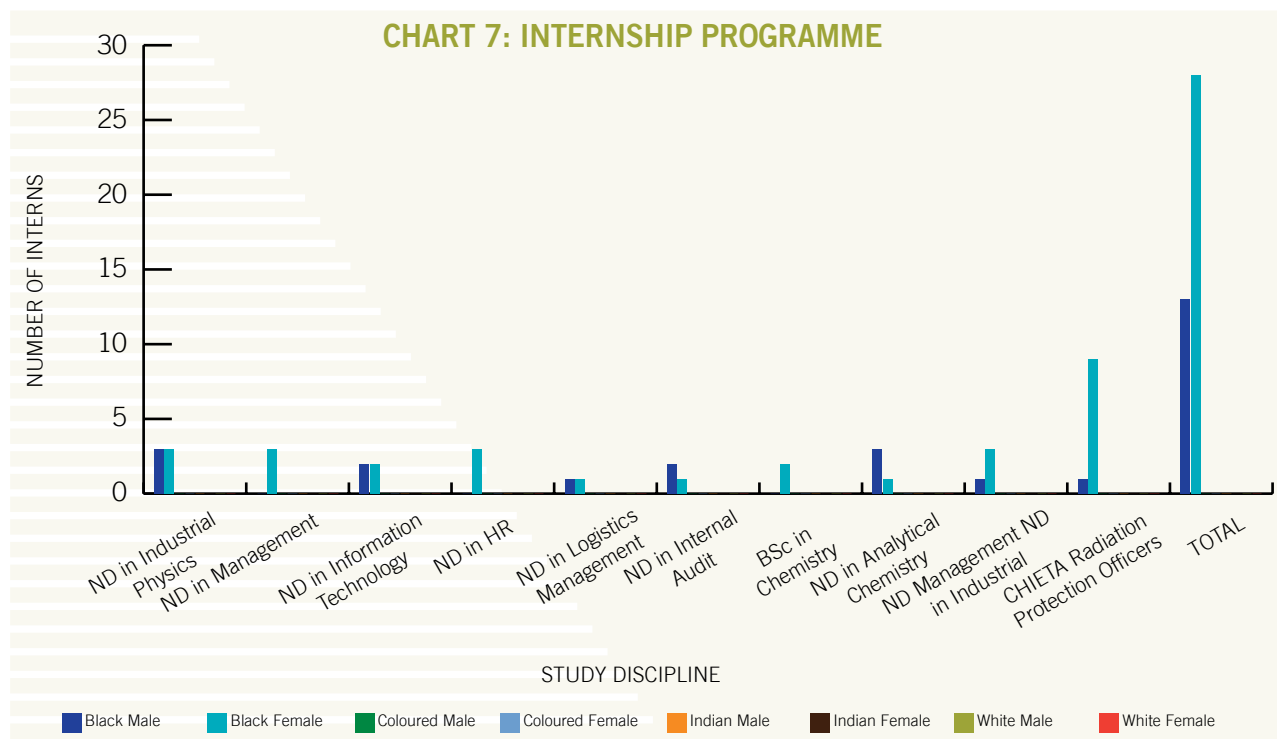


Necsa Learning Academy



Necsa Internship Programme

Necsa embarked on training of interns funded and supported by Chemical Industries Education and Training Authority (CHIETA). A total of forty one (41) unemployed youth comprising of thirteen African males and twenty eight females participated in the programme during this financial year. Details of their area of study is reflected in chart 7 below

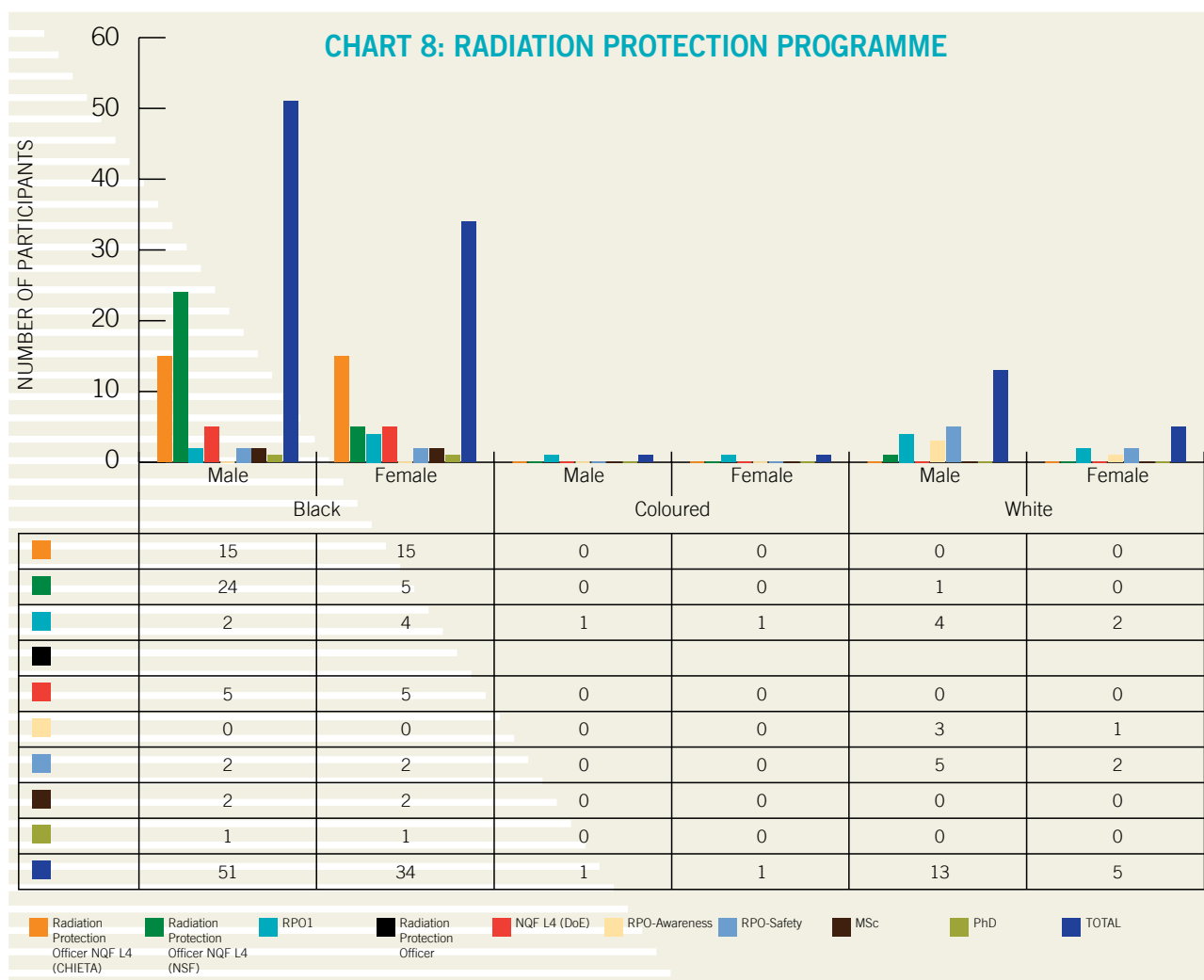


Undergraduate and Post-Graduate Bursaries

Necsa initiated a bursary programme from 2011 for 10 students to pursue studies in designated fields relevant to its operations. The remaining 2 students completed their studies in December 2018. Furthermore, two (2) African candidates who were enrolled at KEPCO International Nuclear Graduate School (KINGS) for a Masters in Nuclear Engineering programme completed their studies in January 2019.

Radiation Protection Programme

A total of ninety nine (105) students enrolled for the Radiation Protection programme offered at the Radiation Protection Training Centre (RPTC). Of those, thirty (30) were funded by National Skills Fund (NSF), thirty (30) funded by CHIETA and ten (10) funded by the Department of Energy as part of their Skills Programmes. Among the programme attended, fourteen (14) were trained for the RPO1 programme, four (4) attended RPO Awareness programme and eleven (11) attended the RPO Safety programme. The RPTC co-supervised four (4) MSc and two (2) PhD students from various institutions in radiation related fields of study. Two were from University of Johannesburg, 1 from the University of the Witwatersrand and another from the North West University. The two (2) PhD students were from University of Johannesburg and University of Pretoria. A breakdown of the above in terms of race and gender is reflected in chart 8 below



Maths and Science Learner Support programme

Necsa entered into an agreement with PROTEC (a Maths and Science NPO) in September 2018 to provide supplementary lessons in Mathematics and Science to Grade 10 and 11 learners from Hofmeyr High School in Atteridgeville. The programme is fully funded by CHIETA through a Discretionary Grant for the year 2018/2019. In total, fifty seven (57) African learners comprising of twenty four (24) males and thirty three (33) females participated in the programme during this financial year.

Nuclear Technology Schools of Specialisation (NTSOS)

A joint strategic partnership between Necsa and Gauteng Department of Education (GDE) was launched on the 24 April 2018. The main aim of the project is for Necsa to influence the curriculum on all matters relating to nuclear technology in order to increase the pipeline required by the industry. These include applications in power generation, health, manufacturing etc. The GDE allocated two (2) schools in Atteridgeville, namely Edward Phathudi Combined School and Phelindaba Secondary School and subsequently requested the inclusion of Hofmeyr High School and Bokgoni Technical School as part of the project. The project focused on Curriculum Development; Maths and Science Programmes; Infrastructure Development; Technical Skills programme for Teachers; and Learners and Resource Mobilisation.



Necsa Recognition of Prior Learning Programme (RPL)

Necsa embarked on training employees for RPL: NQF Level 2 Chemical Operators funded and supported by CHIETA. A total of twenty five (25) employees benefited from the programme with a breakdown of those employees being seventeen African males, one African female, six White males and one White female.

Statutory Training

Safety is a key component of Necsa operations and training in Safety, Health, Environment, and Quality (SHEQ) was undertaken to ensure that organisational operations are compliant with applicable regulatory requirements. A breakdown of training presented and the number of participant per each of the training session is reflected in table 13 below.

TABLE 13: STATUTORY TRAINING

Course	Black		Coloured		Indian		White	
	Male	Female	Male	Female	Male	Female	Male	Female
Chemical Worker Full Course	96	65	2	1	0	2	13	4
Chemical Worker Exam	150	66	21	7	1	1	104	33
Confined Spaces Full Course	0	0	0	0	1	0	0	0
Confined Spaces Exam	13	0	11	1	0	0	6	0
Decontamination Worker Full Course	7	2	1	0	0	0	0	0
Decontamination Worker Exam	21	6	12	1	0	0	4	1
Ergonomics Full Course	0	0	1	0	0	0	0	0
Ergonomics Exam	0	0	16	3	0	0	1	0
JSA Full Course	0	0	1	0	0	0	0	0
JSA Exam	0	0	16	3	0	0	1	0
Laser Worker Exam	1	0	0	0	0	0	0	0
LOTO Full Course	6	0	0	0	2	0	0	0
Lock Out Tag Out Exam	6	0	12	1	0	0	2	0
Noise Worker Full Course	73	38	0	0	2	1	7	1
Noise Worker Exam	302	67	27	4	2	0	168	22
Necsa Orientation	69	72	1	0	3	2	20	3
Contractor Orientation	244	87	14	0	2	1	70	15
Radiation Worker Full Course	101	73	3	1	2	1	15	4
Radiation Worker Exam	165	70	20	2	1	2	126	29
Apply SHE Re-assessment	9	2	0	0	0	0	1	0
Environmental Management	12	2	0	0	1	0	3	0
HIRA	3	1	0	0	0	0	0	0
Incident Investigation	4	4	0	0	0	0	0	0
SHE Representative	3	1	0	0	0	0	0	0
TOTAL	1285	556	158	24	17	10	541	112



Technical Skills Training

The Necsa Skills Development Centre (NSD) continues to fulfill its mandate in response to the National Skills Development Strategy. The Centre was fully utilised and continues to attract new clients. The total number of **apprentices** trained for the reporting year was **196: (2017/18 was 200)**.

Decentralised Trade Test Centre (DTTC)

The Decentralised Trade Test Centre (DTTC) continues to grow and conducted 437 Trade Tests. Trade Test Preparation was conducted for 426 candidates; Gap Training was 166 and Pre-assessment /ARPL was 196

Resource Mobilisation

The National Skills Fund (NSF) has awarded NLA R17.7 million to train 56 apprentices in welding, boiler making, fitting & Turning, electrician, and Instrument Technician trades.

Trade Test Centre (TTC)

The Trade Test Centre (TTC) continues to grow and conducted 384 Trade Tests. Trade Test Preparation was conducted for 502 candidates; Gap Training was conducted for 87 candidates and Pre-assessment/ Artisan Recognition of Prior Learning (ARPL) for 110 candidates.

REAM REPORT

Real Estate Asset Management (REAM) is a Property Management and Transport and Courier and Postal Services department of the organisation, which is responsible for efficient and effective management of the Property and Fleet administration Portfolio on behalf of the Necsa Group.

The portfolio includes office buildings, laboratories, workshop/warehouses, land, residential properties, and vehicle (sedans, passenger vehicles, trucks, and trailers), situated all over South Africa, including assets in Vaalputs and Springbok.

During this period, REAM was managing 16 tenants, and received an income of R12.5 million.

Background

The majority of Necsa infrastructure was constructed during the 1960's and the 1970's. This infrastructure will continue to be central to the organizations' existence, and therefore will always need managing, often with less resource. Well managed infrastructure can realize huge value, but using outdated approaches can result in underperformance and losses.

Real Estate Asset Management (REAM) department was established in late 2017 in order to manage and administer improvements (Buildings) and land on behalf of Necsa Group, and in a sustainable manner, through:

- Development of movable and immoveable asset management strategy;
- The implementation of effective policies and procedures;
- Ensuring due registration of assets and improvements on Necsa portfolio of assets;
- Ensuring the value creation from assets and improvements; and
- Management of an Asset Register consisting of land improvements and the asset life cycle.

In order to implement the above and to exercise best practice in asset management, REAM developed a strategy.

Achievements

Key initiatives aimed at the improvement of the non-core property assets were launched to enable the REAM strategy:

1. Property Valuations

Several properties were traced and included in the 2018/19 financial year valuations of properties. There has been an increase in Property value of ~R 35 million, as compared to 2017/18 valuation. The property value improvement was reflected in the Necsa Group 2018/19 financial report.

The Pelindaba property Rates & Tax, Farm 567 Weldaba, Madibeng Municipality, were corrected from Necsa owing Madibeng municipality R12 million to Madibeng



municipality owing Necsa R8.5 million, post the negotiations between REAM and Madibeng municipality officials.

2. Pelindaba Master plan

It is imperative to develop a blueprint on which the assets will be managed through its life cycle, in order to:

- Improve the efficiencies within the Pelindaba property portfolio;
- Define the core property assets and the non-core property assets; and
- Improve efficiencies by sweating the property assets and generating additional income, in terms of best practise in asset management.

One of the key emerging strategies is the development of the concept master plan for the Pelindaba property in order to define core property assets and non-core property assets that can be exploited in order to improve property value and income.

The pictures below provide an indication of the:

1. Pelindaba Developable land, and

2. The Pelindaba Vision.

Necsa has kept 68% of its land on the Pelindaba site vacant for several decade, in order to secure the formal Emergency Planning zone, or buffer area, (an area within a radius of 5 km from the SAFARI-1 Reactor, with a capacity of 20MW(t))

Benchmark

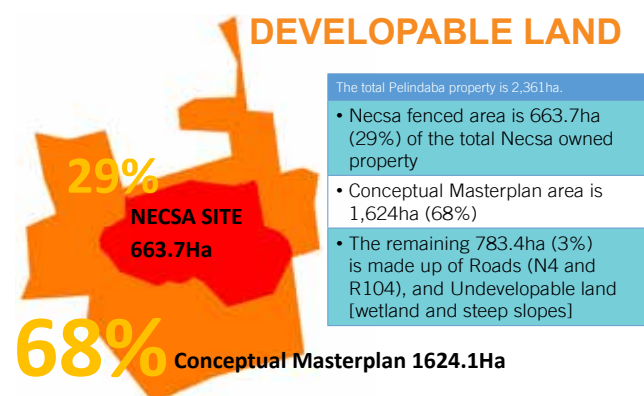
Development within the 5km Emergency Planning zone of a nuclear reactor is possible, as is currently being practised by the Australian Nuclear Science and Technology Organisation (ANSTO) which operates Australia's one and only nuclear reactor — the 20 MW(t) reactor at Lucas Heights, approx. 25kms south of Sydney. Australia is already busy with their master plan for a new precinct at ANSTO, in Lucas Heights, which includes an innovative hub aimed at connecting Australian industry with the nation's best and brightest researchers and engineers. There will be three zones on one campus, where industry professionals will be able

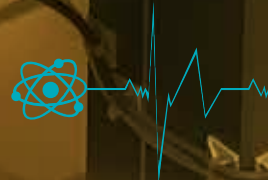
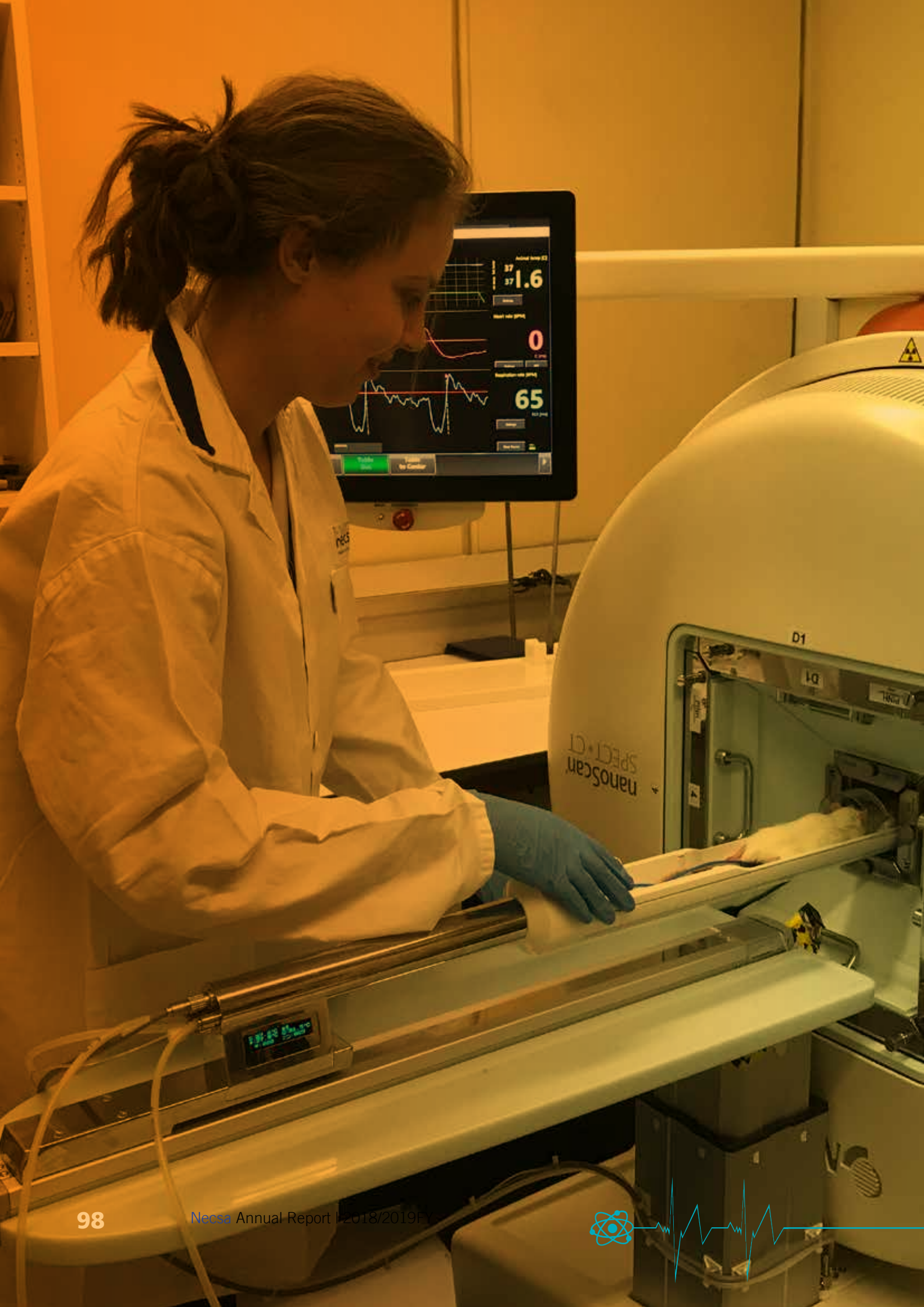
to access ANSTO's infrastructure and research facilities. The precinct will be a place where research and industry meet to ensure that what happens in the lab is developed into real outcomes that benefit all Australians. ANSTO reactor is the same capacity as that of Necsa reactor (famously known as the SAFARI-1 reactor).

Koeberg nuclear power station is a nuclear power station in South Africa. It is currently the only one in the country, and the only one on the entire African continent. It is located 30 km north of Cape Town, near Melkbosstrand on the west coast of South Africa. The suburb, Duynfontein and Van Riebeeckstrand, have been built within the 5km radius of the 1,860 MW (t) capacity reactor. The Koeberg reactor has a capacity ~100 times bigger than the Necsa reactor.

Estimated total bulk 1.7million m²

Estimated total cost R15.6billion







8

Governance Structures

BOARD OF DIRECTORS

Necsa's Board of Directors is appointed by the Minister of Energy as the Shareholder in terms of Section 16 of the Nuclear Energy Act. The Necsa Board of Directors is the Accounting Authority as defined in terms of the Public Finance Management Act, No. 1 of 1999 (PFMA). Due regard is given to the ratio between independent and non-independent members to ensure objectivity in decision-making and the Board collectively and individually acknowledge their responsibilities and duties in terms of the Act, other governance, regulatory and legislative precincts. The Board is appointed for a renewable period of three years and undergoes a Necsa-specific induction process within 1 month of appointment.

ROLE OF BOARD

As Accounting Authority, the Board is responsible for the application of corporate governance principles and the performance of the company. To this end, the Board reviews RISK POLICY, ANNUAL BUDGETS, BUSINESS PLANS, AND CORPORATE STRATEGY.

BOARD CHARTER

The Nuclear Energy Act serves directly as the Necsa Board's Charter - In terms of Section 16 of the Act, "the Board must ensure that the goals of this Act are actively pursued, and must exercise general control over the performance of the Corporation's functions." The functions of Necsa are delineated in the Act under Section 13 on the Main Functions of Corporation and Section 14 on Ancillary powers and functions of Corporation. These relate to nuclear research and development, processing of nuclear materials, control of nuclear waste and compliance with the Republic's international nuclear obligations.

COMPOSITION OF BOARD

For the period under review, the Board composition will be reported over two periods. The Necsa Board members appointed for the period 1 April 2017 to 04 December 2018 and those appointed effective 05 December 2018. For the period up to 04 December 2018, the Necsa Board comprised of 10 Non-Executive Directors who were independently appointed by the Minister of Energy, an Executive Director (Group Chief Executive Officer) and one alternate member of the main member representing the Department of Energy. Over the period 05 December 2018 to 31 March 2019 the Board comprised of 8 Non-Executive Directors and an Acting Group Executive Officer.



NECSA BOARD COMPOSITION FOR THE PERIOD OF 01 APRIL 2017 TO 04 DECEMBER 2018



Dr. K.R. Kemm
Chairperson



Mr. G.P. Tshelane
Group Chief Executive Officer



Dr. G.J. Davids
Non-Executive Director
Chairperson of Research and
Development Committee



Dr. N.T. Magau
Non-Executive Director
Chairperson of Social and Ethics
Committee



Mr. E.N.N. Ngcobo
Non-Executive Director



Mr. M.P.K. Tshivhase
Non-Executive Director
Chairperson of investment and
finance committee



Mr. M.S. Sekgota
Non-Executive Director
chairperson of Nuclear
Operations to Nuclear New Build
Programme Sub-Committee



Mr. Z.C. Ngidi
Non-Executive Director



Ms P. Bosman
Non-Executive Director
Chairperson of Audit and Risk
Committee



Ms. R.P. Mosia
Non-Executive Director

DETAILS OF BOARD MEMBERS

Details of Board Members (1 April 2018 to 04 December 2018)

Title	Surname & Initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, Knowledge and Experience/Qualification	Date of Board Appointment	Stakeholder Represented
Mr	GP Tshelane Group Chief Executive Officer	Male	Black	56	• BSc Honours (Nuclear Physics) –University of Witwatersrand; • BSc (Maths and Physics) – University of Witwatersrand; • Executive Development Programme; • Certificate in Project Management; • Finance for Non-financial Managers – University of Witwatersrand	1 September 2012	Executive Management Group CEO
Dr	KR Kemm Chairperson of the Board Ex-Officio Member of Nuclear Build Committee	Male	White	69	• BSc (Physics and Mathematics), University of KwaZulu-Natal; • BSc (Hons Physics), University of KwaZulu-Natal • MSc (Nuclear Physics), University of KwaZulu-Natal • PhD (Nuclear Physics), University of KwaZulu-Natal	24 March 2016	Independent Member
Dr	NT Magau Chairperson of Social and Ethics Committee	Female	Black	66	• D. Ed, Harvard University; • M. Ed, Rand Afrikaans University; • B. Ed, University of South Africa; • BA, University of the North.	24 March 2016	Independent Member
Dr	GJ Davids Chairperson of Research and Development Committee	Male	Coloured	59	• B.A Public Administration, University of Western Cape; • B.A. (Hon) Development Administration, Stellenbosch University; • Master's Degree Public Administration, Stellenbosch University; • PHD, University of Western Cape; • Certificate in Finance and Economics, IIAP-France; • PMD, Harvard Business School; • GNP, Harvard Business School	7 December 2016	Independent Member
Mr	MPK Tshivhase Chairperson of Investment and Finance Committee	Male	Black	56	• B Juris Diploma, University of Zululand; • BA Law, LLB, University of Limpopo	24 March 2016	Independent Member



Title	Surname & Initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, Knowledge and Experience/ Qualification	Date of Board Appointment	Stakeholder Represented
Mr	ENN Ngcobo Official of the Department of Energy	Male	Black	62	• MSc (Eng.), Technical University of Sofia, Bulgaria • BSc (Science), University of Zululand, RSA • PhD (Doctor of Philosophy), Cambridge University, UK	24 March 2016	Shareholder Representative
Mr	ZC Ngidi	Male	Black	58	• BA Law, LLB, UKZN Westville • Various Development Courses on the following: Tax Competency, MBA, Financial Management, Marketing, Business Law, Economics, Human Resources Management	24 March 2016	Independent Member
Mr	MS Sekgota Chairperson of Nuclear Operations (Nuclear New Build Programme) Sub-Committee	Male	Black	40	• B.Com Honours (Strategic Marketing) • B.Com Business Management		Independent Member
Ms	P Bosman Chairperson of Audit and Risk Committee Member of Social & Ethics Committee Member of Nuclear Build Committee	Female	Black	45	• Chartered Accountant • Bachelor of Commerce, UKZN • BCompt Honours, University of South Africa • Postgraduate Diploma in Auditing, University of South Africa	24 March 2016	Independent Member
Mrs	RP Mosia	Female	Black	51	• BCom Accounting, University of the North • Business Administration, Wits Graduate School of Business; • Criminal Justice in Auditing, UJ • BCTA (Bridging Certified Theory in Accounting), UJ • Master in Business Leadership (MBL), • PG Higher Dip In Tax Law, University of Cape Town	24 March 2016	Independent Member
Mr	KP Maphoto	Male	Black	44	• M.Sc Applied Environmental Nuclear Physics, University of Western Cape • B. Sc (Honours) Physics, Former University of the North (University of Limpopo) • Bachelor of Science (Physics and Chemistry)	1 August 2017	Shareholder Representative



NECSA BOARD COMPOSITION FOR THE PERIOD OF 05 DECEMBER 2018 TO 31 MARCH 2019



Dr. R.M. Adam
Chairperson of the Board



Mr. D. Robertson
Acting CEO



Mr. A. Patel
Non-Executive Director &
member of Audit and Risk
Committee



Mr. B. Singh
Non-Executive Director &
Chairperson of the Audit and Risk
Committee



Mr. J.P. Ndhlovu
Non-Executive Director &
Member of Social & Ethics
Committee



Dr. R. Masango
Non-Executive Director



Dr. P.E. Molokwane
Non-Executive Director &
member of Social & Ethics
Committee



Ms. M.V. Ngwenya
Non-Executive Director &
member of Audit and Risk
Committee



Ms. P.N. Kingston
Non-Executive Director &
Chairperson of Social & Ethics
Committee

DIRECTORS APPOINTMENT EFFECTIVE 6 DECEMBER 2018

Title	Surname & Initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, Knowledge and Experience/Qualification	Date of Board Appointment Date of first appointment	Stakeholder Represented
Mr	Robertson D Acting CEO	Male	White	69	- BSc Honours Mathematics Rhodes University - MSc Mathematics Rhodes University	10 December 2018	Executive Management Acting CEO
Dr	RM Adam Chairperson of the Board	Male	White	63	- BSc Honours (Chemistry) – University of Cape Town - BSc Honours (Physics) – UNISA - MSc (Physics) – UNISA - PhD (Physics) – UNISA - Coaching for Performance – Open University	5 December 2018	Independent Member
Mr	A Patel Non-Executive Director & member of Audit and Risk Committee	Male	Indian	45	- B Proc LLB and H Dip (Company Law) – University of Witwatersrand - Diploma in Pension Funds – University of Witwatersrand - DLA Piper Harvard leadership Programme – Harvard Business School	5 December 2018	Independent Member
Mr	B Singh Non-Executive Director & Chairperson of the Audit and Risk Committee	Male	Indian	49	- B.Com - B.Com Honours(Accounting) – UNISA - Advance Credit Diploma – Institute of Bankers in SA - Certificate in Banking (CAIB) – Institute of Bankers - MBA (General) – University of Pretoria - International Executive Development Programme (IEDP) –University of Witwatersrand	5 December 2018	Independent Member
Mr	JP Ndhlovu Non-Executive Director & Member of Social & Ethics Committee	Male	Black	49	- Oxford Advanced Management Programme (MAP) – Said Business School, Oxford University UK - Bachelor of Administration Honours (Industrial Psychology) – University of KwaZulu Natal - Honours (Organisational Psychology) – University of KwaZulu Natal	5 December 2018	Independent Member



Title	Surname & Initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, Knowledge and Experience/Qualification	Date of Board Appointment Date of first appointment	Stakeholder Represented
Dr	R Masango Non-Executive Director	Female	Black	44	• PhD (Nuclear Engineering) - Pennsylvania State University, USA • MSc (Nuclear Engineering) - Pennsylvania State University, USA • Diploma in Project Management – Lyceum College (JHB) • BTech Degre (Chemical Engineering) - Cape Peninsula University of Technology • National Diploma (Chemical Engineering) - Cape Peninsula University of Technology	5 December 2018	Independent Member
Dr	PE Molokwane Non-Executive Director & member of Social & Ethics Committee	Female	Black	42	• PhD (Chemical Technology –Environmental) – University of Pretoria • MSc (Applied Radiation Science & Technology) – University of North West • BSc Physics & Chemistry – University of North West • Post-Graduate Diploma (Applied Radiation Science & Technology) – University of North West	5 December 2018	Independent Member
Ms	MV Ngwenya Non-Executive Director & member of Audit and Risk Committee	Female	Black	50	• B.A Hons (Labour Relations) – Rand Afrikaans University • B.A Social Work – University of the North • Management Advanced Programme (MAP) – Wits University	5 December 2018	Independent Member
Ms	PN Kingston Non-Executive Director & Chairperson of Social & Ethics Committee	Female	Black	49	• MSc (International Law) – University of Nottingham, England • BA LLB – University of Wales, Wales • International Baccalaureate Diploma – International School of Moshi, Tanzania	5 December 2018	Independent Member

NOTE: The following Board Members resigned subsequent to yearend, but before the approval of the Annual Report: Dr Rob Adam, 4 July 2019; Mr Jabulani Ndhlovu, 7 July 2019; Dr Ramatsemela Masango, 2 August 2019; Mr Aadil Patel, 19 August 2019.



MEETINGS OF THE BOARD

The Nuclear Energy Act requires that the Board meets at least four times per annum to discuss and review the Strategy and Business Plan. Special Board Meetings are convened, when necessary, to deliberate on issues that require Board resolutions between scheduled meetings. Members of Management are periodically invited to make presentations on issues of particular interest to the Board.

Dates of the meetings 1 April 2018 – 31 March 2019

Members Attendance for Directors appointment ending 05 December 2018									
Members Names	30 May 2018	31 May 2018 Special – continue AFS Matter	05-06 July – Board Strategy	30 July 2018	07 August 2018 Ms Bosman High Court/ Matter (ECDC)	02 October 2018 – NTP Production & Business Expansion	29 October 2019 – NTP & NECSA Joint Boards	19 November 2018 – Special AGSA Audited AFS, Management Report review	29 November 2018
Mr GP Tshelane	P	P	P	P	P	P	P	P	P
Dr KR Kemm	P	P	P	P	P	P	P	P	P
Dr NT Magau	P	P	P	P	P	P	P	P	P
Dr GJ Davids	P	A	P	A	P	P	P	P	T
Mr MPK Tshivhase	A	A	P	P	P	A	A	P	A
Mr ENN Ngcobo	A	A	A	P	P	P	P	A	A
Mr ZC Ngidi	P	A	P	A	P	P	P	T	P
Mr MS Sekgota	P	P	A	P	P	P	P	P	P
Ms P Bosman	P	P	P	P	P	P	P	P	P
Mrs RP Mosia	P	P	P	P	P	P	A	A	P
Mr KP Maphoto	A	A	A	A	A	A	A	A	A

Members Attendance for Directors appointment effective 05 December 2018					
Members Names	13 December 2018 (Special – Welcome with minister of Energy)	21 January 2019 (Special) AGSA Management letter & audit opinion	8 February 2019 (Telecon)	27 February 2019	13 March 2019 (BoD Strategy)
Mr D Robertson	P	P	P	P	P
Dr RM Adam	P	P	P	P	T
Mr A Patel	T	P	P	P	A
Mr B Singh	P	P	P	P	P
Mr JP Ndhlovu	P	A	P	P	P
Dr R Masango	A	P	P	P	P
Dr PE Molokwane	P	A	P	P	P
Ms MV Ngwenya	P	P	P	A	P
Ms PN Kingston	P	P	P	P	P
Mr ENN Ngcobo (DoE Representative)		P			

- P** Member present at the meeting
A Member not present, but tendered an apology
T Member participated in the meeting via Telecom



COMMITTEES OF THE BOARD

In terms of Section 19 of the Nuclear Energy Act, the Board is advised and assisted by advisory committees, whose mandate is to assist the Board in discharging its mandate and responsibilities. These committees play an important role in enhancing high standards of governance and improving effectiveness within the Necsa Group.

Following appointment of the New Board effective 6 December 2018, upon review of the Committees of Board, the Board resolved to retain only two statutory committees for its Board, the Audit & Risk as well as the Social & Ethics Committee. Other standing committees of the Board were disbanded.

Audit and Risk Committee

The Audit and Risk Committee comprises three Non-executive Directors. A Non-executive Director, who is not the Chairman of the Board, chairs the Committee.

The Audit Committee assists the Board in overseeing:

- The quality and integrity of the Group's financial statements and the disclosure thereof;
- The scope and effectiveness of the external audit function; and
- The effectiveness of the Company's internal controls and internal audit function.

The members of the Committee for the period 1 April 2018 to 04 December 2018 were:

- Ms P Bosman (Chairperson)
- Mr ZC Ngidi
- Mr SM Sekgota
- Mrs RP Mosia
- Mr GP Tshelane
- Mr NA Mhlongo (Co-opted Chair of ARC of NTP Radioisotopes, a Necsa Subsidiary)

Members of the Committee for the period from 05 December

- Mr B Singh (Chairperson)
- Dr PE Molokwane
- Mr A Patel
- Mr D Robertson

The table below reflects meetings convened.

Dates of meeting 1 April 2018 to March 2019

Committee members for the period 1 April 2018 to 04 December 2018		
Members Names	24 May 2018	24 July 2018
Ms P Bosman (Chairperson)	P	P
Mr ZC Ngidi	A	A
Mr SM Sekgota	P	P
Mrs RP Mosia	P	P
Mr GP Tshelane	P	P
*Mr NA Mhlongo	P	P
Committee members from 05 December 2018		
Members Names	21 February 2019	
Mr B Singh (Chairperson)	P	
Dr PE Molokwane	P	
Mr A Patel	A	
Mr D Robertson	P	

- * **Mr NA Mhlongo (Co-opted Chair of ARC of NTP Radioisotopes, a Necsa Subsidiary)**
- P** Member present at the meeting
- A** Member not present, but tendered an apology
- T** Member participated in the meeting via Telecom

Social and Ethics Committee

This Committee was formally constituted in line with the provisions of regulation 43(5) read with section 72(4)-(10) of the Companies Act, Act 71 of 2008. The duties and responsibilities of the committee as stipulated by the act amongst others are:

- Monitoring the Company's activities, having regard to any relevant legislation, other legal requirements or prevailing codes of good practice, with regard to matters relating to:



- To draw matters within the Committee's mandate to the attention of the Board as the occasion requires;
- To report, through one of its members, to the shareholders at the Company's annual general meeting on matters falling within its mandate.

Members of the Committee for the period 1 April 2018 to 04 December 2018 were:

- Dr NT Magau (Chairperson)
- Dr GJ Davids
- Mr ZC Ngidi
- Ms P Bosman
- Mr GP Tshelane
- Mr ENN Ngcobo

Members of the Committee from 05 December 2018 were:

- Ms P Kingston (Chairperson)
- Dr PE Molokwane
- Mr PJ Ndhlovu
- Mr D Robertson

Dates of meeting 1 April 2018 to March 2019

Committee members for the period 1 April 2018 to 04 December 2018		
Members Names	23 May 2018	23 July 2018
Dr NT Magau (Chairperson)	P	P
Dr GJ Davids	P	P
Mr ZC Ngidi	P	A
Ms P Bosman	P	A
Mr GP Tshelane	P	P
Mr ENN Ngcobo	P	P
Committee members from 05 December 2018		
Members Names	5 January 2019	
Ms P Kingston	P	
Dr PE Molokwane	P	
Mr PJ Ndhlovu	A	
Mr D Robertson	A	

- P Member present at the meeting
 A Member not present, but tendered an apology
 T Member participated in the meeting via Telecom

Research and Development Committee

The Research and Development Committee comprises three Non-executive Directors and two co-opted members. A non-executive Director, who is not the Chairman of the Board, chairs the Committee.

The Committee's Terms of Reference assigns it the following responsibilities:

- Make recommendations concerning:
 - Policy and implementation of Research, Development and Technology;
 - Research and Development initiatives proposed by Management;
 - Implementation of best practices;
 - Potential opportunities in nuclear research and development;
 - Capacity development and annual research budget;
 - External collaboration; and
 - Strategic management of Intellectual Property
- Monitoring:
 - Management of Research, Development and Nuclear Technology; and
 - Progress in collaboration with other organisations.

Members of the Committee for the period 1 April 2018 to 05 December 2018 were:

- Dr GJ Davids (Chairperson)
- Mr MPK Tshivhase
- Mr GP Tshelane
- Mr ENN Ngcobo
- Mr KP Maphoto
- Prof Z Vilakazi, Co-opted Member

The Committee meetings convened as follows:

Member Name	Meeting Dates	
	23 May 2018	23 July 2018
Dr GJ Davids (Chairperson)	P	P
Mr MPK Tshivhase	A	A
Mr GP Tshelane	P	A
Mr ENN Ngcobo	P	P
Mr KP Maphoto	A	A
Prof Z Vilakazi	A	A

P Member present at the meeting
A Member not present, but tendered an apology
T Member participated in the meeting via Telecom

Investment and Finance Committee

The Investment and Finance Committee comprises four non-executive Directors. A non-executive Director, who is not the Chairman of the Board, chairs the Committee.

The responsibilities of this Committee include:

- Investment policies;
- Reviewing the viability of business opportunities and/or cases;
- Reviewing the Necsa Group's financial performance;
- Procedures to monitor compliance with investment policies by Officers, Employees and Necsa's Investment Board's agents;
- Approval of investment transactions;
- Monitoring the effectiveness of the investment policies;
- Considering and recommending approval by the Necsa Board of the Necsa Group Corporate Plan; and
- Such other matters as may be delegated to the Committee by the Board.

Members of the Committee for the period 1 April 2018 to 05 December 2018 were:

- Mr MPK Tshivhase (Chairperson)
- Mr GP Tshelane

- Mr ZC Ngidi
- Mrs RP Mosia
- Mr MS Sekgota

The table below reflect meetings convened:

Member Name	Meeting Dates	
	24 May 2018	24 July 2018
Mr MPK Tshivhase (Committee Chairperson)	P	P
Mr GP Tshelane	P	P
Mr ZC Ngidi	A	A
Mrs RP Mosia	P	P
Mr MS Sekgota	P	P

P Member present at the meeting
A Member not present, but tendered an apology
T Member participated in the meeting via Telecom

Nuclear Operations (Nuclear New Build) Committee

The Nuclear Operations Committee comprises five non-executive Directors and one Executive Director. A non-executive Director, who is not the Chairman of the Board, chairs the Committee.

The responsibilities of the Subcommittee shall include, but not be limited to, the following:

Serving as a sounding board by means of the provision of sound advice in, inter alia; the following areas and activities:

- Assessment of nuclear energy system sustainability, taking into account global scenarios and strategies;
- Support for development of long-range national energy strategies, and reporting on technological and institutional innovations that are necessary to achieve sustainable nuclear power programs for South Africa;
- Looking into opportunities and challenges posed by the national energy development plan;
- Coordination of nuclear power planning, design and building operations;



- New construction energy modelling and commissioning standards;
- Nuclear energy-related technical standards for new constructions; renovations and refurbishments;
- Identification of nuclear energy efficient equipment and technologies;
- Coordination and cooperation between Necsa and other local and international bodies and other relevant stakeholders that share common goals with Necsa to help ensure the sustainable development of nuclear energy;
- Development and maintenance of a suite of tools that may be used to analyse and compare different design alternatives related to the nuclear energy concepts from the perspectives of: 1) economics and sustainability, 2) safety and reliability, 3) proliferation resistance and security;
- Nuclear power technological innovation and demonstration projects;
- Public education; and
- Synergies with other Board Sub-Committees where it relates to the Nuclear New Build Programme (i.e. procurement, funding, strategic business case for employment opportunities, environmental impact zoning, water permits, suite suitability etc.)

In addition, the Sub-committee will:

Provide an accessible platform for management and staff within the business units of Necsa to participate in identifying, exploring and proposing a range of future nuclear power consideration and present these to the Board; and

Identify information gaps in respect of opportunities and provide guidance on national priorities.

Members of the Committee for the period 1 April 2018 to 04 December 2018 were:

- Mr MS Sekgota (Chairperson)
- Dr KR Kemm (Board Chairperson)
- Mr GP Tshelane
- Mrs RP Mosia
- Ms P Bosman

- Dr GJ Davids
- Mr KP Maphoto

Committee meetings were convened as follows:

Name	Meeting Dates	
	24 May 2018	24 July 2018
Mr MS Sekgota (Committee Chairperson)	P	P
Dr KR Kemm (Board Chairperson)	P	P
Mr GP Tshelane	P	P
Mrs RP Mosia	P	P
Ms P Bosman	A	A

- P** Member present at the meeting
A Member not present, but tendered an apology
T Member participated in the meeting via Telecom



EXECUTIVE MANAGEMENT COMMITTEE

In terms of Sections 22 and 23 of the Nuclear Energy Act, the CEO has the power and authority, among other things, to implement approved business plans, annual budgets and all other issues and matters relating to the achievement of Necsa's goals, as well as prepare, review, and recommend to the Board the annual budgets and any amendments thereto.

The CEO, in carrying out the powers set out above, is assisted by the Executive Management Committee. The CEO is the Chairperson of the Committee. The Committee's main functions include alignment of Necsa's business with the Group mission, vision, strategies, targets and policies, and consideration of material business, strategic, financial and functional issues.



Mr. Phumzile Tshelane
Necsa CEO



Mr. Don Robertson
Acting CEO



Mr. Thabo Tselane
Chief Technology Officer



Mr. Ruby Ramatsui
Group Executive- Pelindaba
Engineering, Construction and
Consulting



Mr. Umesha Natha
General Manager - Strategy and
Performance



Mr. Vusi Malebana
Chief Legal Advisor





Mr. Ayanda Myoli
Chief Information Officer



Ms. Mosa Rasweswe
Group Executive Nuclear
Compliance and Services



Mr. Rico Viljoen
Acting Chief Financial Officer



Mr. Zahir Ismail
Acting Head of Internal Audit



Mr. Fabrizio Dionisio
Acting Divisional Executive;
Research and Technology
Development



Mr. Monde Mondl
Group Executive Human
Resources and Real Estate Asset
Management



Mr. Fortune Mkhabela
Chief Risk Officer



Ms. Nikelwa Tengimfene
General Manager Corporate
Communication and Stakeholder
Relations



Ms. Hlengiwe Khumalo
Chief Financial Officer

DETAILS OF EXECUTIVE MANAGEMENT

The members of the Executive Management Committee (EXCO) for the financial year were:

Name	Capacity	Appointed to the Committee	Qualifications
Mr GP Tshelane	Group CEO	01 January 2017	- BSc (Maths and Physics) – University of Witwatersrand; - BSc Honours (Nuclear Physics) – University of Witwatersrand; - Executive Development Programme; - Certificate in Project Management; - Finance for Non-financial Managers – University of Witwatersrand
Mr D Robertson	Acting CEO	10 December 2018	- BSc Honours (Mathematics) – Rhodes University - MSc (Mathematics) – Rhodes University
Mr TJ Tselane	Chief Technology Officer	01 September 2017	- B.Sc (Chemistry and Physics) –North West University - B.Sc (Honours Nuclear Physics) -North West University - M.Sc (Applied Nuclear Physics –University of Western Cape, - Project Management qualification –University of Pretoria - Executive Senior Management Programme qualification – University of Pretoria - Global Executive Development Programme - GIBS
Mr R Ramatsui	Group Executive: Pelindaba Engineering, Construction and Consulting	01 September 2017	- Master of Business Administration - UNISA - Project Management – University of Wales - HND Mechanical Engineering - Government Certificate of Competency (GCC) Factories
Mr U Natha	General Manager: Strategy and Performance	01 September 2017	- B Eng: Chemical Engineering – UKZN - Masters of Business Administration - UKZN
Mr V Malebana	Chief Legal Advisor (ex-officio member)	01 September 2017	- BA LLB - UCT, - Diploma International Nuclear Law – France - Certificate International Nuclear Law – NEA - Certificate International Nuclear Law - France
Mr AB Myoli	Chief Information Officer Divisional Executive: NFC	01 June 2012	- B Sc (Mechanical) – UCT - Masters of Business Leadership (MBL) – UNISA - Snr. Management Programme – University of Stellenbosch Business School - Diploma Packaging Management – Durban Institute of Technology
Ms M Rasweswe	GE: Nuclear Compliance and Services	01 January 2017	N Dip Chemical Engineering
Mr R Viljoen	Acting Chief Financial Officer	November 2018	B COMPT Accountancy - UNISA
Mr Z Ismail	Acting Head of Internal Audit (Co-opted member)	01 November 2018	BCompt Degree - UNISA
Mr F Dionisio	Acting Divisional Executive: Research & Development	01 September 2017	MSc (Engineering Science) – WITS



Name	Capacity	Appointed to the Committee	Qualifications
Mr M Mondi	Group Executive: Human Resources and Real Estates Asset Management	01 September 2017	• Bachelor of Philosophy – University of Stellenbosch • BA Education- University of Transkei • Masters Diploma (HRM) – RAU • Masters Artium (Labour Relations & HRM) – UPE • Management Development Programme - UNISA
Mr F Mkhabela	Chief Risk Officer	01 January 2018	• B. Com (Accounting) - University of Witwatersrand; • Honours B. Com (Auditing) – UNISA • Certified Internal Auditor (CIA) - (Global Institute of Internal Auditors) • Certification in Control Self-Assessment (Global Institute of Internal Auditors) • Certificate in Public Sector Risk Management (National Treasury) • Certificate in Performing an Effective Quality Assessment from the Institute of Internal Auditors South Africa (IIASA) • Certificate in Advanced Performance Auditing in the Public Sector from the Institute of Internal Auditors South Africa (IIASA).
Ms N Tengimfene	General Manager: Corporate Communication & Stakeholder Relations	01 September 2017	• Advanced Diploma in Social Work, National Training Welfare Institute, Dar es Salaam • BA (Industrial & Organisational Psychology)- UNISA • Hons BA (Industrial & Organisational Psychology) – UNISA • MA (Industrial & Organisational Psychology) - UNISA
Ms Hlengiwe Khumalo	Chief Financial Officer	February 2017	• N Dip: Internal Auditing • BCom Auditing • Post-Graduate Diploma in Business Management • MBL



RISK MANAGEMENT

Enterprise-wide Risk Management has as principal objective increasing the likelihood of Necsa achieving its objectives by optimally balancing risk and reward. The methodology and processes described below are aimed at ensuring that significant business risks are systematically identified, assessed and reduced to acceptable levels.

Risk Methodology

Group Risk Management follows the Risk Management Framework of ISO 31000, the Committee of Sponsoring Organisations (COSO) of the Treadway Commission, the National Treasury Risk Management Framework and King III in order to ensure alignment with best practice.

The Necsa Group Risk Management Policy and Strategy was approved by the Board in March 2015. The Strategy outlines roles and responsibilities for risk identification, assessment and management as well as the overall risk management process. As a nuclear organisation operating a Research Reactor, sustainability risks relating to safety, security, regulatory compliance and commercial success of subsidiaries are prioritised. Current, imminent, and envisaged risks that may threaten the long-term sustainability of the Group are considered.

Necsa's risk tolerance is set at a risk rating level of ≥ 16 (i.e. those risks with high impact and high likelihood of occurrence). The company's risk appetite has been defined as "No risk may remain in the very high (unacceptable) category ($16 \leq \text{rating} \leq 25$) for longer than two consecutive quarters before being managed into a more acceptable (lower) risk category ($\text{rating} \leq 15$)".

Risk Management Assurance

Assurance for the Risk Management Process is provided through a series of interrelated processes which include Divisional Risk Champions, the Group's Internal Risk Management Committee (IRMC), Internal Audit, the Audit and Risk Committees of EXCO and the Board and ultimately the Board of Directors.

The IRMC assists the Executive Management Committee (EXCO) and the Board with implementation of the Risk Management Policy and Strategy by developing processes for risk identification and control. These processes involve Risk Champions updating Divisional Risk Registers at Management Committee meetings for amalgamation into the Necsa Group Strategic Risk Register. The ARC meets on a quarterly basis to review the Necsa Group Strategic Risk Register and progress with risk responses. Internal Audit conducts a risk-based audit and assesses the effectiveness of the risk management processes for assurance to both EXCO and the Board.

STRATEGIC GROUP RISKS

The top ten risks currently faced by the Group are indicated as follows:

Necsa Corporate

Security of Supply of LEU Fuel Plates

Low Enriched Uranium (LEU) fuel plates are essential in the manufacturing of Fuel Elements and Control Rods for SAFARI-1. Mitigation actions include the diversifying suppliers by establishing partnerships and collaborations.

Residual Risk Level is at 20.

Liquidity Risk

This risk refers to Necsa's effectiveness when it comes to cash flow management, which is critical due to the Necsa's current financial position. Mitigation actions include accessing the MTEF ring-fenced funds and accessing the additional bank overdrafts if approved; budget manuals and guidelines are circulated to line management and information sessions are held by decentralized financial officers and GE's/ DE's emphasising the importance of costs cutting within the Necsa Group; the forecast is managed on a monthly basis in order to ensure that allocated budget is spent sparingly and proper procurement processes are followed; delegations of authority are issued in order to



ensure that funding is approved by qualified officials; complete management accounts are provided monthly to EXCO for deliberation and implementation of zero budget; and identification of new financial streams.

Residual Risk Level is at 25.

Pelindaba Enterprise Sales Targets

The risk of Pelindaba Enterprise not achieving its sales targets impacts on its viability. Mitigation actions include implementation of a corporate plan, increase repetitive orders, and increase the order book, holding managers accountable for actions under their control and use of market related rates.

Residual Risk Level is at 20.

Going Concern Status

Necsa's Going Concern is financial sustainability as it is crucial in determining business continuity. Mitigation actions include savings on variable costs which are being pursued by reprioritising expenditure and focus on variable cost savings. Employees are encouraged to negotiate cost savings from suppliers prior to placing purchase orders, thus encouraging an increased sales focus/ commercial revenue, as well as securing additional funding for R&D, borrowing funding for Capital projects (DBSA, IDC), and engaging with the Pelchem Board as shareholder to find solutions as far as Pelchem business is concern.

Residual Risk Level is at 25.

SOURCE OF NEUTRON AVAILABILITY BEYOND 2030

Mitigation actions include SAFARI-1 to run until 2030 and preferable in parallel with Multi -Purpose Research Reactor (MPRR) for 3 to 5 years. Specification requirements for RFQ's of MPRR are in place.

Residual Risk Level is at 25.

Necsa not achieving an unqualified audit opinion

Mitigation actions include resolution of all outstanding internal and external audit findings, regular reassessment of policies and procedures and compliance thereon to prevent new findings, internal audit assurance, regular skills training, and implement management control policy framework.

Residual Risk Level is at 25

NTP

Business Growth Stagnation - Reliance on One Major Product (Mo-99) to Sustain the Business

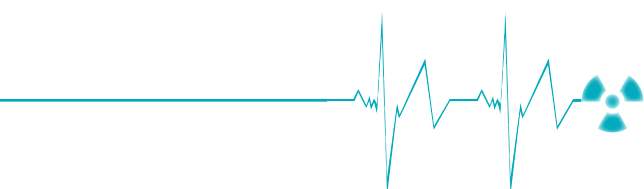
Lack of product diversification makes NTP's business excessively vulnerable to changes in the market for Mo-99. Mitigation actions include the product range to be broadened with introduction of non-carrier Lu-177 Dotatate and Lu-177 PSMA. iThemba LABS investment is to be explored as well as a Radiopharmaceutical Market Growth Strategy.

Residual risk rating remains at 20.

NTP Non-Adherence and non-compliance to safety and regulatory requirements

The nuclear environment is heavily regulated, and any non-compliance may result in shutdown of production facility. Mitigation actions include enhanced technical surveillance, internal and external audits are performed, maintain and improve the safety culture enhancement programme, keep relevant policies, and procedures and SOP 'current and relevant. The engineering department is the custodian of the production Cells, therefore it will authorise the handover of the production cells for routine production processes and to do maintenance for routine maintenance, continuous staff training on all relevant policies, procedures and SOP's, perform plant integrity assessment, as well as training methodologies to include written exams and practical job observations

Residual Risk Level is at 16



NTP Inadequate Capacity to Handle High Density U-Residue

If the U-Residue is not handled appropriately it will affect production process. Mitigation actions include hot commissioning of the U-residue removal from Cell 3 to Cell 6A (Welding) to Cell 6B (safeguards) and finally to Cell 2 for interim storage of the long term storage containers is in progress, increasing the ratio of MEU versus LEU production of Mo-99 reduces the amount of waste produced and increases the time buffer, LTS transfer flask design project (NTP), and Thabana pipestore extension project (NECSA)

Residual Risk Level is at 20

Pelchem

Liquidity challenges [inability to pay creditors; loans; suppliers; salaries; other financial obligations] & solvency challenges [inability to raise funding/grants; low investors' confidence]. Mitigation actions include automated cost management system, cash forecasting, and budget monitoring.

Residual Risk Level is at 20





9 Sustainability Report

INTRODUCTION

The Necsa Group is committed to the goal of sustainable development to ensure that opportunities available to future generations are not compromised. To this end, the company's Economic, Social and Environmental Impacts are considered below.

In each of the three domains, sustainability is examined in terms of the relevant capitals at the core of the International Integrated Reporting Framework and relevant performance indicators presented.

ECONOMIC SUSTAINABILITY

The following Integrated Report Capitals are directly linked to Economic Sustainability:

- Necsa's **Financial Capital** includes operational and capital grants from government, revenues from commercial ventures as well as debt Financing. Necsa manages its Financial Capital through its Finance and Business Development Division, its two commercial subsidiaries NTP and Pelchem, as well as the Pelindaba Enterprises division as incubator of new business ventures. In addition, a Business Development Department resides in the Office of the CEO.

Financial Capital Indicators

Necsa Group	2014	2015	2016	2017	2018	2019
Necsa Corporate Sales	R332m	R353m	R382m	R401m	R388m	R402m
NTP Group Net Profit	R89m	R69m	R183m	R203m	R122m	R147m
Pelchem Group Net Profit	(R34m)	(R18m)	R29m	(R36m)	(R35m)	R77m
Group Bank Overdraft	R21m	R66m	R85m	R124m	R32m	R46m

- Necsa's **Manufactured Capital** includes its buildings, infrastructure, plant and equipment used in its operations. It is managed jointly by the Utilities and Facilities, Security Services and Corporate Finance department as well as the respective facility operating units.

Manufactured Capital Indicators

Necsa Group	2014	2015	2016	2017	2018	2019
Research Reactor Availability	302 days	300 days	303 days	298 days	299 days	276 days

- Necsa's **Intellectual Capital** includes the organisation's stock of intellectual property, as well as the tacit knowledge embedded in system and possesses. Necsa manages its intellectual capital through the intellectual Property Office in the Business Development department and the Knowledge Management unit. The research and development division generates new intellectual property.



Intellectual Capital Indicators

Necsa Group	2014	2015	2016	2017	2018	2019
Innovation Disclosure	17	18	13	15	10	10
Research Publications	33	34	55	43	45	38
Internationally Granted Patents	11	50	16	10	7	2

SOCIAL SUSTAINABILITY

Social sustainability can be analysed in terms of human as well as social relationship capitals:

- Necsa's **Human Capital** includes the vast educational qualifications of its staff and their nuclear industry experience as well as their motivation to innovate and collaborate. The Human Resources department in collaboration with the Necsa Learning Academy are dedicated to manage this capital.

Human Capital Indicators

Necsa Group	2014	2015	2016	2017	2018	2019
Staff Number	1 839	1 906	1 857	1 912	1 962	1 900
Percentage Technical Staff	50.4%	50.1%	49.2%	47.8%	45.01%	44.95%
Black Technical Staff as % of All Technical Staff	48.7%	53.1%	56.0%	58.5%	61.51%	44.93%
Trade Test Conducted	435	467	450	304	437	384
Study Assistance Recipients	149	148	146	102	142	146

- Necsa's **Social and Relationship Capital** includes its relationship with key stakeholders such as government, the National Nuclear Regulator, media, customers and business partners. In addition, the social networks among its employees and the community around the Pelindaba site contributes to individual and collective well-being. Necsa manages this capital by means of Corporate Communications and Stakeholders Relations department in collaboration with the departments taking responsibility for the indicators below.

Social and Relationship Capital Indicators

Necsa Group	2014	2015	2016	2017	2018	2019
Disabling injury Incident Rate	0.64	0.71	0.78	1.1	1.01	0.68
Non- Unionised Staff Percentage	20.5%	18.7%	16%	15.3%	14.61%	11.98%

ENVIRONMENTAL SUSTAINABILITY

The natural capital from the integrated Reporting Framework can be analysed to examine Environmental Sustainability:

- Necsa's **Natural Capital** includes the abiotic factors on and around the Pelindaba site such as the land, air, aquifers, rivers and water bodies as well as attendant vegetarian and animal life. Necsa's Environmental Management group takes responsibility for environmental monitoring on the Pelindaba site and has a veterinarian on call to attend to fauna in need. The Nuclear Liability Management department performs ongoing Decommissioning and Decontamination while the Utilities and facilities department manages water and electricity consumption. The Central Scrap Recovery unit manages redundant materials in compliance with safety and security requirements and utilises certified waste and paper contractors

Natural Capital Indicators

Necsa Group	2014	2015	2016	2017	2018	2019
Execution of Annual Decommissioning and Decontamination Plan	104%	106%	90%	99%	122.8%	85.15%
Public Dose Impact as % of Allowable Limit (0.250 mSv)	3.9%	2.5%	2.2%	2.2%	1.94%	1.16%
Percentage of Permitted Effluent Released to Crocodile River (250 000m ³)	58%	77%	43%	29%	20.5%	27%
Percentage of Permitted Fluoride Emission	25%	25%	34%	25%	12%	n/a
Annual Electricity Usage	86 GW.h	86 GW.h	86 GW.h	76 GW.h	67 GW.h	69.61GW.h
Annual Water Usage	907k.m ³	977k.m ³	1.064k.m ³	1.064k.m ³	1.006k.m ³	771.4 k.m ³

Water year is from October 2018 - September 2019

The Sun Rises over Necsa's Pelindaba Site





10 Financial Report

The South African Nuclear Energy Corporation SOC Limited and its Group Companies

(Registration number 2000/003735/06)

Financial statements for the year ended 31 March 2019

Index

The reports and statements set out below comprise the financial statements presented to the shareholder:

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Level of assurance

These Annual Financial Statements have been audited in compliance with the applicable requirements of the Companies Act of South Africa, (Act No. 71 of 2008).



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

(Registration number 2000/003735/06)

Financial statements for the year ended 31 March 2019

General Information

Country of incorporation and domicile	South Africa
Nature of business and principal activities	The South African Nuclear Energy Corporation SOC Limited is responsible for managing certain institutional obligations defined in the Nuclear Energy Act, No. 46 of 1999
Directors	Dr RM Adam (Chairman) Mr B Singh Mr A Patel Mrs MV Ngwenya Mr JP Ndhlovu Mr GP Tshelane (Necsa Group Chief Executive Officer) suspended in December 2018 Mr DG Robertson (Necsa Group Acting Chief Executive Officer) appointed in December 2018 until July 2019 DR PE Molokwane Ms PN Kingston (Interim Board Chairperson) Dr R Masango Mr AB Myoli (Necsa Group Acting Chief Executive Officer) appointed in 9 July 2019 to date
Registered office	Elias Motsoaledi Street Extension (Church Street West) R104 Pelindaba Brits Magisterial District, Madibeng Municipality North West Province, 0240
Business address	Elias Motsoaledi Street Extension (Church Street West) R104 Pelindaba Brits Magisterial District, Madibeng Municipality North West Province, 0240
Postal address	PO Box 582 Pretoria, 0001
Shareholder	Department of Energy
Auditor	Auditor-General of South Africa Registered Auditors
Company secretary	Mr MZ Jantjie (Acting Company Secretariat)
Company registration number	2000/003735/06
Preparer	The financial statements were internally supervised by: Mr Rico Viljoen Bcompt (UNISA) Acting Group Chief Financial Officer



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

(Registration number 2000/003735/06)

Financial statements for the year ended 31 March 2019

Director's Responsibilities and Approval

The directors are required in terms of the Companies Act of South Africa and the Public Finance Management Act No.1 of 1999 (PFMA) to maintain adequate accounting records and are responsible for the content and integrity of the Annual Financial Statements and related financial information included in this report. It is their responsibility to ensure that the Annual Financial Statements fairly present the state of affairs of the Group and Company as at the end of the financial year and the results of its operations and cash flows for the year then ended, in conformity with International Financial Reporting Standards. The external auditor is engaged to express an independent opinion on the financial statements.

The Annual Financial Statements are prepared in accordance with International Financial Reporting Standards and are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgement and estimates.

The directors acknowledge that they are ultimately responsible for the system of internal financial control established by the group and place considerable importance on maintaining a strong control environment. To enable the directors to meet these responsibilities, they set standards for internal control aimed at reducing the risk of error or loss in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the group and all employees are required to maintain the highest ethical standards in ensuring the group's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the group is on identifying, assessing, managing and monitoring all known forms of risk across the group. While operating risk cannot be fully eliminated, the group endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The directors are of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the Annual Financial Statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or loss.

The directors have reviewed the group's cash flow forecast for the year ended 31 March 2020 and, in light of this review and the current financial position, they are satisfied that the group has or had access to adequate resources to continue in operational existence for the foreseeable future.

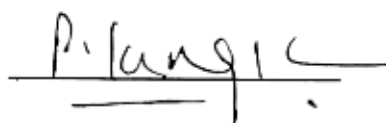
The external auditor is responsible for independently auditing and reporting on the group's financial statements. The financial statements have been examined by the group's external auditor and their report is presented on pages 135 to 144.

The financial statements set out on pages 124 to 244, which have been prepared on the going concern basis, were approved by the directors on 31 July 2019 and were signed on their behalf by:



Mr AB Myoli

Necsa Acting Group Chief Executive Officer



Ms PN Kingston

Interim Board Chairperson



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

(Registration number 2000/003735/06)

Financial statements for the year ended 31 March 2019

Report of the Audit and Risk Committee

We herewith present our report for the financial year ended 31 March 2019.

1. AUDIT AND RISK COMMITTEE TERMS OF REFERENCE

The Audit and Risk Committee has adopted formal terms of reference that have been approved by the Board of Directors. The Committee has conducted its affairs in compliance with its terms of reference and has discharged its responsibilities contained therein.

2. AUDIT AND RISK COMMITTEE MEMBERS, MEETING ATTENDANCE AND QUALIFICATIONS

The Committee is independent and consists of three independent, Non Executives Directors. It meets at least four times per year as per its terms of reference. Attendance of meetings, dates of appointments as well as qualifications of the members are included in the governance report.

3. ROLES AND RESPONSIBILITIES

3.1 Statutory Duties

The Committee's role and responsibilities include statutory duties as per the Companies Act, PFMA and further responsibilities assigned to it by the Board of Directors.

3.2 External Auditor Appointments and Independence

The Committee has satisfied itself that the external auditor was independent of the Group, as set out in the Companies Act, which includes consideration of conflicts of interest as prescribed by the Public Auditors Act (PAA). Requisite assurance was sought and provided by the external auditor that internal governance processes within the audit firm, support and demonstrate its claims to independence.

3.3 Financial Statements and Accounting Practices

The Committee has evaluated the Annual Financial Statements of the company and the Group for the year ended 31 March 2019 and based on the information provided to the Committee, noted deficiencies with compliance in the preparation of the Annual Financial Statements, with the requirements of the Companies Act and the PFMA, and International Financial Reporting Standards. The Committee concurs that the adoption of the going concern premise in the preparation of the Annual Financial Statements is appropriate. The Committee has recommended the adoption of the Annual Financial Statements and the Integrated Annual Report by the Board of Directors however, pronouncing on the deficiencies that must be fixed as a matter of urgency through an action plan by management. The Audit and Risk Committee has:

- Reviewed and discussed with the Auditor General and Accounting Authority the audited Annual Financial Statements;
- Reviewed the Auditor General's management letter and management responses;
- Reviewed changes in accounting policies and practices;
- Reviewed significant adjustments resulting from the audit; and
- Reviewed and discussed with the Accounting Authority, Performance Information submitted to the Auditor General.

3.4 Internal Financial Controls

The internal financial function lacks proper controls and various recommendations have been made to management towards improving the control environment. The Committee has overseen a process by which internal audit has performed audits according to a risk based audit plan where the effectiveness of the risk management and internal controls were evaluated. The Audit and Risk Committee's concerns draws from the information and explanations provided by the Internal Audit function as well as those raised by the Auditor General. The findings of these evaluations formed the basis for the Committee's recommendations in this regard to the Board of Directors, in order for the Board of Directors to report thereon.

3.5 Going Concern

The Committee has reviewed management's assessment of the going concern status of the Group and has recommended to the Board of Directors that the Group is a going concern.

The South African Nuclear Energy Corporation SOC Limited and its Group Companies

(Registration number 2000/003735/06)

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Report of the Audit and Risk Committee

3.6 Internal Audit

The Committee is responsible for ensuring that the Group's Internal Audit is independent and has the necessary resources, standing and authority within the Group to enable it to discharge its duties. Furthermore, the Committee oversees cooperation between the internal and external auditors and serves as a link between the Board of Directors and these functions. The Committee considered and approved the internal audit charter. The internal audit function's annual audit plan and three year strategic plan were approved by the Committee.

The internal audit function reports administratively to the Chief Executive Officer and functionally to this Committee and is responsible for reviewing and providing assurance on the adequacy of the internal control environment across all of the Group's operations. The Internal Audit Manager has direct access to the Committee, primarily through its Chairperson. From the various reports of the internal auditors, the findings were noted and recommendation made to management to implement the corrective actions.

3.7 Expertise and Experience of Chief Financial Officer and Finance Function

In ensuring continuity in the finance function, the entity appointed an Acting Chief Financial Officer who has the appropriate expertise and experience. The Committee is concerned with the proper functioning of the finance department, especially with regard to appropriate skills and experience of employees. The committee has made various recommendations to management to capacitate the function appropriately.

3.8 Governance of Risk

The Committee oversees the implementation of the risk management policy and plan taking into account risk management systems and processes. The Committee is satisfied that appropriate and effective systems for monitoring of risks are in place, however the committee remains alert to the fact that the strategic risk exposure remains significantly high.

3.9 Auditor General

The Committee accepts the audit opinion of the Auditor General on the Annual Financial Statements and recommends that the audited Annual Financial Statements be accepted and read together with the report of the Auditor General.



Mr B Singh

Chairperson

On behalf of the Audit and Risk Committee



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Group Secretary's Certification

In terms of Section 88 (2) (e) of the Companies Act 71 of 2008, as amended, I certify that the group has lodged with the Commissioner all such returns as required of a state-owned company in terms of the Act and that all such returns are true, correct and up to date.

Fulufhuwani Corporate Governance and Legal Advisory (PTY) LTD "FCGLA" from 1 April 2017 until 31 December 2018.

From 1 January 2019 to 31 March 2019 the company secretary were provided by Necsa Office of Legal Services and Company Secretariat (Interim).



Mr MZ Jantjie

Acting Company Secretariat



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Directors' Report

The directors have pleasure in submitting their report on the financial statements of The South African Nuclear Energy Corporation SOC Limited and its Group Companies for the year ended 31 March 2019.

1. INCORPORATION

The company was incorporated on 24 February 2000 as a Schedule 2 public entity in terms of the PFMA and obtained its certificate to commence business on the same day.

2. REVIEW OF FINANCIAL RESULTS AND ACTIVITIES

Necsa derives its mandate from the Nuclear Energy Act, No. 46 of 1999 and the Minister of Energy (the Minister) to manage and operate certain of the Republic's nuclear related functions and facilities.

Necsa has been assigned the responsibility for managing certain institutional obligations of the Republic as defined in the Act. The main functions of the Company are:

- To undertake and promote research and development in the field of nuclear energy and radiation sciences and technology and subject to the Safeguards agreement, to make these generally available;
- To process source material, special nuclear material and restricted material and to process and enrich source material and nuclear material; and
- To co-operate with any person or institution in matters falling within these functions subject to the approval of the minister.

Ancillary powers and functions may be granted to the Group:

- In connection with its main functions;
- In order to create and utilise viable business opportunities in commerce and industry; and
- In order to undertake the development and/or exploitation of nuclear technology or nuclear related technology.

With regard to its nuclear related activities Necsa is governed by Nuclear Installations Licences (NIL's) issued by the National Nuclear Regulator (NNR) in terms of the Nuclear Regulator Act 47 of 1999.

The subsidiary companies in turn, have a mandate from Necsa to operate in a self-sustainable manner and to remain competitive in the industries within which they operate.

Full details of the financial position, results of operations and cash flows of the group are set out in these Consolidated financial statements.

3. DIVIDENDS

A dividend of R20m was declared by NTP however it was utilized to offset the portion of the NTP loan to Necsa of R58.5m.

4. DIRECTORATE

Details of the directors in office during the year and to the date of this report are as follows:

Directors	Designation	Appointed
Dr RM Adam (Chairman)	Board Chairperson	Appointed 05 December 2018. Resigned 04 July 2019
Mr B Singh	Non-executive	Appointed 05 December 2018
Mr A Patel	Non-executive	Appointed 05 December 2018. Resigned 19 August 2019
Mrs MV Ngwenya	Non-executive	Appointed 05 December 2018
Mr JP Ndhlovu	Non-executive	Appointed 05 December 2018. Resigned 07 July 2019
Dr KR Kemm (Chairperson)	Non-executive	Removed by Minister of Energy on 6 December 2018
Mr GP Tshelane (Necsa Group Chief Executive Officer)	Executive	Appointed 1 September 2012. Suspended 04 December 2018
DR PE Molokwane	Non-executive	Appointed 05 December 2018
Ms P Bosman	Non-executive	Removed by Minister of Energy on 6 December 2018
Mr DG Robertson (Necsa Group Acting Chief Executive Officer)	Executive	Appointed 10 December 2018. Resigned 30 June 2019
Dr NT Magau	Non-executive	Removed by Minister of Energy on 04 December 2018
Mrs RP Mosia	Non-executive	Removed by Minister of Energy on 04 December 2018
Mr ENN Ngcobo	Non-executive	Removed by Minister of Energy on 04 December 2018
Mr ZC Ngidi	Non-executive	Removed by Minister of Energy on 04 December 2018
Dr GJ Davids	Non-executive	Removed by Minister of Energy on 04 December 2018
Ms PN Kingston (Acting Necsa Board Chairperson)	Non-executive	Appointed 05 December 2018
Dr R Masango	Non-executive	Appointed 05 December 2018. Resigned 02 August 2019
Mr AB Myoli (Necsa Group Acting Chief Executive Officer)	Executive	Appointed 9 July 2019



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Directors' Report

5. DIRECTORS' INTERESTS IN CONTRACTS

During the financial year, no contracts were entered into which directors or officers of the Group had an interest and which significantly affected the business of the Group.

6. INTERESTS IN SUBSIDIARIES

Name of Company	Nature of Business	Place of Incorporation	Issued Share Capital		Effective percentage		Number of Shares			Profit/(Loss) after taxation	
			2019	2018	2019	2018	2019	2018	2018	2019	2018
			R	R	%	%				R'000	R'000
ARECSA Human Capital SOC Ltd ^(5 and 6)	Training in nuclear & related industries	South Africa	1,000	1,000	51	51	510	510	-	-	102
Cyclofil SOC Ltd ⁵	Dormant	South Africa	1	1	100	100	1	1	-	-	-
NTP	Marketing and distribution of radiopharmaceuticals	South Africa	220	220	100	100	220	220	(151,995)	108,456	
Radioisotopes SOC Ltd ⁵	Logistics	South Africa	100	100	51	51	51	51	3,539	9,075	
NTP Logistics SOC Ltd ¹	Supply of isotopes and accessories for the radiographic non-destructive testing market.	Belgium	726,137	726,137	100	100	4,734	4,734	-	(20,714)	
NTP	Marketing of radiopharmaceutical products	South Africa	4,000	4,000	100	100	4,000	4,000	1,365	4,348	
Radioisotopes Europe SA ¹											
AEC Amersham SOC Ltd ¹											
Pharmatopes SOC Ltd ³	Dormant	South Africa	1,000	1,000	100	100	1,000	1,000	-	-	-
Gammatec NDT Supplies SOC Ltd ¹	Non-destructive testing equipment and accessories	South Africa	300	300	55	55	165	165	2,743	6,529	
Gammatec Aseana NDT Supplies SDN. BHD ⁴	Non-destructive testing equipment, accessories and consumables	Malaysia	860,074	860,074	55	55	275,000	275,000	(347)	312	

The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Directors' Report



Name of Company	Nature of Business	Place of Incorporation	Issued Share Capital		Effective percentage		Number of Shares		Profit/(Loss) after taxation	
			2019	2018	2019	2018	2019	2018	2019	2018
			R	R	%	%			R'000	R'000
Gamma Film Industries SOC Ltd ⁴	Dormant	South Africa	100	100	55	55	55	55	-	-
Gammatec Middle East General Trading Liability Co ⁴	Non-destructive testing equipment, accessories and consumables	Middle East	414,270	414,270	41.81	41.81	125	125	(761)	(2,975)
Pelchem SOC Ltd ⁵	Fluorochemical products	South Africa	770,310	770,310	100	100	770,310	770,310	(79,452)	(26,974)
Fluoro Pack SOC Ltd ²	Dormant	South Africa	100	100	100	100	100	100	-	-
Fluorochem SOC Ltd ²	Dormant	South Africa	100	100	100	100	100	100	-	-
Fluoropharm SOC Ltd ²	Dormant	South Africa	4,000	4,000	100	100	4,000	4,000	-	-
Limited Electronics South Africa SOC Ltd ²	Manufacturing and distribution of Nitrogen Tri-Fluoride	South Africa	1,000	1,000	100	100	1,000	1,000	-	7,195

1 Subsidiary of NTP Radioisotopes SOC Ltd

2 Subsidiary of Pelchem SOC Ltd

3 Subsidiary of AEC Amersham SOC Ltd

4 Subsidiary of Gammatec NDT Supplies SOC Ltd

5 Subsidiary of Necsa SOC Ltd

6 The profit/(loss) after tax relates to interest earned on ARECSA's bank account. ARECSA is almost wholly impaired.

Details of the Group's investment in subsidiaries are set out in note 6.



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Directors' Report

7. INTEREST IN ASSOCIATES

Name of Company	Nature of Business	Place of Incorporation	Issued Share Capital			Effective Percentage		Number of Shares	
			2019	2018	R	2019	2018	2019	2018
			R	R		%	%		
Business Venture Exploration Investments No. 33 (Pty) Ltd ²	Dormant	South Africa	3,840	3,840		41,61	41,61	1,598	1,598
Gamwave (Pty) Ltd (formerly Cyclotope) ³	Radiation of food sources	South Africa	100	100		40	40	40	40
Oserix ¹	Supply of isotopes and accessories for the radiographic non-destructive testing market	South Africa	582	582		13,75	13,75	80	80
Element 42 ³	Dormant	South Africa	-	-		50	50	-	-

- 1 Associate of Gammatec NDT Supplies SOC Ltd. Gammatec NDT Supplies SOC Ltd holds 25% of Oserix issued share capital.
NTP Radio Isotopes SOC Ltd holds 55% of Gammatec NDT Supplies SOC Ltd therefore resulting in the group having significant influence over the associate.
- 2 Associate of Necsa SOC Limited
- 3 Associate of NTP Radioisotopes SOC Ltd

The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Directors' Report

8. SHAREHOLDER

The Company's sole shareholder is the State, represented by the Minister of Energy.

9. EVENTS AFTER THE REPORTING PERIOD

The primary transactional bank reduced Necsa's banking facilities from R73 million to R34 million during May 2019. Furthermore, there were material events that happened in 2017/18 and are reported as prior year adjustments. The reason for material prior year adjustments are mainly as a result of notwithstanding the fact that the Necsa AFS were signed off by AGSA, however the AFS were concluded on the AFS submitted on 31 May 2018 that excluded all audit and management adjustments.

10. GOING CONCERN

The Annual Financial Statements have been prepared on the basis of accounting policies applicable to a going concern. According to the Conceptual Framework of Financial Reporting, the annual financial statements are prepared using the underlying assumption that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

We draw attention to the fact that as at 31 March 2019, the company had accumulated losses of R 465,359 million and that the company's total assets exceed its liabilities by 138,525 million.

11. AUDITORS

The Auditor-General of South Africa continued in office as auditors for the company and its subsidiaries for 2019.

12. COMPANY SECRETARY

FCGLA Pty Ltd was the Company Secretary during the from the period 1 April 2018 to 31 December 2018. From 1 January 2019 to 31 March 2019 the company secretary were provided by Necsa Office of Legal Services and Company Secretariat (Interim).

Postal address	PO Box 164
	Carlswald
	1685
Business address	105 Ninth Road
	Carlswald
	Midrand
	1685

13. COMPLIANCE WITH LEGISLATION

The directors believe the Group has complied, in all material respects, with the provisions of the Companies Act, PFMA and the Nuclear Energy Act and other applicable legislation during the year under review.



Independent Auditor's Report

Report of the Auditor-General to Parliament on the South African Nuclear Energy Corporation SOC Limited

REPORT ON THE AUDIT OF THE CONSOLIDATED AND SEPARATE FINANCIAL STATEMENTS

Disclaimer of opinion

1. I was engaged to audit the consolidated and separate financial statements of the South African Nuclear Energy Corporation SOC Limited and its subsidiaries (the group) set out on pages 123 to 242, which comprise the consolidated and separate statement of financial position as at 31 March 2019, consolidated and separate statement of comprehensive income, consolidated and separate statement of changes in equity, and consolidated and separate statement of cash flows for the year then ended, as well as the notes to the consolidated and separate financial statements, including a summary of significant accounting policies.
2. I do not express an opinion on the consolidated and separate financial statements of the group. Because of the significance of the matters described in the basis for disclaimer of opinion section of this auditor's report, I was unable to obtain sufficient appropriate audit evidence to provide a basis for an audit opinion on these consolidated and separate financial statements.

Basis for disclaimer of opinion

Going concern for consolidated and separate financial statements

3. I was unable to obtain sufficient appropriate audit evidence to confirm the reasonableness of the cash flows forecasted and the related assumptions, conditions and events to support management's assessment of the entity's viability in the foreseeable future.

Preparation of the consolidated and separate financial statements

4. I was unable to obtain sufficient appropriate audit evidence that the accounting authority has fulfilled its responsibility for the preparation and fair presentation of the consolidated and separate financial statements in accordance to International Financial Reporting Standards (IFRS), as written representations in this respect were not provided. I was also unable to obtain written representations from the accounting authority that I had been provided with all the relevant information and access as agreed in terms of the audit engagement, and that all transactions had been recorded and were reflected in the consolidated and separate financial statements. I could not determine the effect of the lack of such representations on the financial position of the public entity and the group at 31 March 2019 or the financial performance and cash flows for the year then ended.

Consolidated financial statements

5. I was unable to obtain sufficient appropriate audit evidence that the consolidated financial statements and the notes thereto have been properly prepared as required by IFRS 10, Consolidated financial statements, as the consolidation could not be substantiated with supporting workings that reconcile and agree to the consolidated financial statements. The public entity did not have adequate systems of internal control in place for the preparation of the consolidated financial statements. I was unable to audit the consolidated financial statements by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the consolidated financial statements as a whole.

Decommissioning and decontamination stage 1 liability

6. I was unable to obtain sufficient appropriate audit evidence for the decommissioning and decontamination stage 1 liability on the consolidated and separate financial statements due to numerous limitations placed on the expert in performing the calculation of the provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the decommissioning and decontamination stage 1 liability stated at R3 556 000 000 (2018: R3 309 472 000) in the consolidated and separate financial statements.

Decommissioning and decontamination stage 1 asset

7. I was unable to obtain sufficient appropriate audit evidence for the decommissioning and decontamination stage 1 asset due to numerous limitations placed on the expert in performing the calculation of the provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the decommissioning and decontamination stage 1 asset stated at R3 556 000 000 in the consolidated and separate financial statements.



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Independent Auditor's Report

Revenue – sale of goods

8. I was unable to obtain sufficient appropriate audit evidence for revenue – sale of goods in the consolidated financial statements due to the status of the accounting records. The public entity did not have adequate systems of internal controls in place for the recording of all transactions and events and further could not reconcile the transactions and events to the financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine if any further adjustment were necessary to revenue – sale of goods stated at R2 103 843 000 (2018: R2 507 279 000) in the consolidated financial statements. The possible effect of the matter was not considered material to the separate financial statements.

Cost of sales

9. I was unable to obtain sufficient appropriate audit evidence for the cost of sales at Pelchem SOC Limited and the South African Nuclear Energy Corporation SOC Limited due to the status of the accounting records at the public entity and its subsidiary. The public entities did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the consolidated and separate financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to cost of sales stated at R1 514 122 000 (2018: R1 445 341 000) and R258 389 000 in the consolidated and separate financial statements, respectively.

Other operating expenses

10. I was unable to obtain sufficient appropriate audit evidence for the other operating expenses due to numerous limitations placed on the expert in performing the calculation of the decommissioning and decontamination provision. Additionally, Pelchem SOC Limited could not provide supporting evidence for certain transactions and did not account for all expenses. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to other operating expenses stated at R1 159 27700 and R937 767 000 in the consolidated and separate financial statements, respectively.

Other financial assets

11. I was unable to obtain sufficient appropriate audit evidence for the other financial assets relating to the decommissioning and decontamination provision due to the inappropriate assumptions relating to the timing of the cash flows. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the decommissioning and decontamination asset included in the other financial assets stated at R904 723 000 in the consolidated and separate financial statements.

Deferred income

12. I was unable to obtain sufficient appropriate audit evidence for deferred income due to the status of accounting records. The public entity did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the consolidated and separate financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to deferred income stated at R562 651 000 in the consolidated and separate financial statements.

Decommissioning and decontamination stage 2 liability

13. I was unable to obtain sufficient appropriate audit evidence for the decommissioning and decontamination stage 2 liability on the consolidated and separate financial statements due to inappropriate assumptions relating to the timing of the cash flows. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the decommissioning and decontamination stage 2 liability stated at R541 472 000 (2018: R198 064 000) in the consolidated and separate financial statements.

Trade and other payables

14. I was unable to obtain sufficient appropriate audit evidence for the trade and other payables at Pelchem SOC Limited and the South African Nuclear Energy Corporation SOC Limited due to the status of the accounting records at the public entity and its subsidiary. The public entities did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the consolidated and separate financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to trade and other payables stated at R503 779 000 (2018: R466 227 000) and R49 761 000 (2018: R93 473 000) in the consolidated and separate financial statements, respectively.



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Financial statements for the year ended 31 March 2019

Independent Auditor's Report

Other income

15. I was unable to obtain sufficient appropriate audit evidence for the other income due to numerous limitations placed on the expert in performing the calculation of the decommissioning and decontamination provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the other income stated at R454 701 000 and R364 611 000 in the consolidated and separate financial statements, respectively.

Trade and other receivables

16. I was unable to obtain sufficient appropriate audit evidence for the trade and other receivables at Pelchem SOC Limited and at the South African Nuclear Energy Corporation SOC Limited due to the status of the accounting records at the public entity and its subsidiary. The public entities did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the consolidated and separate financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to trade and other receivables stated at R406 380 000 (2018: R559 470 000) and R93 558 000 in the consolidated and separate financial statements, respectively.

Decommissioning and Decontamination of Stage 2 funding asset

17. The public entity did not recognise all decommissioning and decontamination assets in accordance with the requirements of IFRS 9, Financial instruments. Funding assets that did not meet the recognition criteria of IFRS 9, Financial instruments, were incorrectly recognised as assets. Consequently, other financial assets and other income was overstated by R338 857 617 in the consolidated and separate financial statements.

Investment income

18. I was unable to obtain sufficient appropriate audit evidence for the investment income due to numerous limitations placed on the expert in performing the calculation of the decommissioning and decontamination provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the investment income stated at R323 710 000 and R294 081 000 in the consolidated and separate financial statements, respectively.

Inventories

19. I was unable to obtain sufficient appropriate audit evidence for the inventories due to the status of the accounting records. The public entity did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the consolidated and separate financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the inventories stated at R309 440 000 (2018: R283 222 000) and R41 389 000 (2018: R66 115 000) in the consolidated and separate financial statements, respectively.

Finance costs

20. I was unable to obtain sufficient appropriate audit evidence for the finance costs due to numerous limitations placed on the expert in performing the calculation of the decommissioning and decontamination provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to finance costs stated at R286 768 000 and R279 162 000 in the consolidated and separate financial statements, respectively.

Amounts received in advance

21. I was unable to obtain sufficient appropriate audit evidence for the amounts received in advance due to the status of the accounting records. The public entity did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the consolidated and separate financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the amounts received in advance stated at R162 662 000 and R237 839 000 in the consolidated and separate financial statements, respectively.

Decommissioning and decontamination stage 2 asset

22. I was unable to obtain sufficient appropriate audit evidence for the decommissioning and decontamination stage 2 asset due to inappropriate assumptions relating to the timing of the cash flows. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the decommissioning and decontamination stage 2 asset stated at R151 163 000 in the consolidated and separate financial statements.



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Financial statements for the year ended 31 March 2019

Independent Auditor's Report

Vaalputs after care

23. I was unable to obtain sufficient appropriate audit evidence for the Vaalputs after care due to management's inappropriate methodologies and assumptions in performing the calculation of the provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Vaalputs after care stated at R91 454 000 in the consolidated and separate financial statements.

Investment contributions for future liabilities

24. I was unable to obtain sufficient appropriate audit evidence for the investment contributions for future liabilities due to numerous limitations placed on the expert in performing the calculation of the decommissioning and decontamination provision. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to investment contributions for future liabilities stated at R40 014 000 in the consolidated and separate financial statements.

Revenue – other grants

25. I was unable to obtain sufficient appropriate audit evidence for revenue – other grants in the separate financial statements due to the status of the accounting records. The public entity could not provide sufficient appropriate audit evidence for the amount disclosed in the separate financial statements. The public entity did not have adequate systems of internal control in place for the recording of all transactions and events and further could not reconcile the transactions and events to the financial statements. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to revenue – other grants stated at R15 070 000 in the separate financial statements. The possible effect of the matter was not considered material to the consolidated financial statements.

Prior period errors

26. Pelchem SOC Limited and the South African Nuclear Energy Corporation SOC Limited did not disclose prior period errors in note 38 to the financial statements, as required by International Accounting Standard (IAS 8), Accounting policies, changes in accounting estimates and errors. The nature and the amount of the correction for each financial statement item affected and the amount of the correction at the beginning of the earliest previous period were not disclosed. In addition, I was unable to obtain sufficient appropriate audit evidence for the prior period errors disclosed, as the supporting evidence was not provided. I was unable to confirm these disclosures by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to these disclosures in the consolidated and separate financial statements.

Revenue – sale of goods

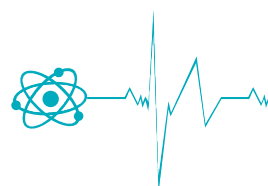
27. The South African Nuclear Energy Corporation did not recognise all items of revenue in accordance with IFRS 15, Revenue from contracts. Revenue relating to the previous year was incorrectly recognised in the current year. Additionally, recoveries from subsidiaries were incorrectly recognised as revenue instead of other income. The effect on the separate financial statements was that revenue was overstated by R41 464 197 (2018: R23 277 208). There was an impact on the surplus for the period and on the accumulated loss in the separate financial statements. The effect of the matter was not considered material to the consolidated financial statements.

Disclosures in the financial statements

28. The separate financial statements did not include all disclosures required by various IFRS and were not presented to achieve fair presentation. I have not included the omitted information in this auditor's report as it was impractical to do so.

Responsibilities of the accounting authority for the consolidated and separate financial statements

29. The board of directors, which constitutes the accounting authority is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with the IFRS and the requirements of the Public Finance Management Act of South Africa 1999, (Act no 1 of 1999) (PFMA) and the Companies Act of South Africa, 2008 (Act No. 71 of 2008) (Companies Act), and for such internal control as the accounting authority determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.
30. In preparing the consolidated and separate financial statements, the accounting authority is responsible for assessing the group's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless the appropriate governance structure either intends to liquidate the group or to cease operations, or has no realistic alternative but to do so.



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Independent Auditor's Report

Auditor-general's responsibilities for the audit of the consolidated and separate financial statements

31. My objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.
32. A further description of my responsibilities for the audit of the consolidated and separate financial statements is included in the annexure to this auditor's report.

REPORT ON THE AUDIT OF THE ANNUAL PERFORMANCE REPORT

Introduction and scope

33. In accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA) and the general notice issued in terms thereof, I have a responsibility to report material findings on the reported performance information against predetermined objectives for the selected key performance areas (KPAs) presented in the annual performance report. I performed procedures to identify findings but not to gather evidence to express assurance.
34. My procedures address the reported performance information, which must be based on the approved performance planning documents of the public entity. I have not evaluated the completeness and appropriateness of the performance indicators included in the planning documents. My procedures also did not extend to any disclosures or assertions relating to planned performance strategies and information in respect of future periods that may be included as part of the reported performance information. Accordingly, my findings do not extend to these matters.
35. I evaluated the usefulness and reliability of the reported performance information in accordance with the criteria developed from the performance management and reporting framework, as defined in the general notice, for the following selected KPAs presented in the annual performance report of the public entity for the year ended 31 March 2019:

KPA	Pages in the annual performance report
KPA 1 – Necsca corporate financials	24
KPA 2 – NTP group financials	22
KPA 3 – Pelchem group financials	21
KPA 4 – Research outputs	24
KPA 5 – Innovation value chain	24
KPA 6 – Establish sustainable supply of LEU fuel and target plates	20
KPA 7 – SAFARI-1 operation	22
KPA 8 – D&D programme execution	22
KPA 9 – Compliance to SHEQ, license and other regulatory requirements	23

36. I performed procedures to determine whether the reported performance information was properly presented and whether performance was consistent with the approved performance planning documents. I performed further procedures to determine whether the indicators and related targets were measurable and relevant, and assessed the reliability of the reported performance information to determine whether it was valid, accurate and complete.
37. The material findings in respect of the usefulness and reliability of the selected KPAs are as follows:

KPA 1 - Necsca corporate financials

External sales (including intra-group sales)

38. The achievement for external sales (including intra-group sales) reported in the annual performance report was R402 400 000. However, the supporting evidence provided did not agree to the reported achievement and indicated an achievement of R380 700 000.

The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Independent Auditor's Report

KPA 3 - Pelchem group financials

Net profit after tax

39. I was unable to obtain sufficient appropriate audit evidence for the reported achievement of the key performance area. This was due to limitation placed on the scope of my work. I was unable to confirm the reported achievement by alternative means. Consequently, I was unable to determine whether any adjustment was required to the achievement of -R75 000 000 as reported in the annual performance report.

KPA 8 - D&D programme execution

Execution of annual plan of action as approved by DOE

40. I was unable to obtain sufficient appropriate audit evidence to validate the existence of systems and processes that enable reliable reporting of actual service delivery against the indicator. This was because documented system descriptions were established for only some of the activities encompassing the indicator. I was unable to validate the existence of systems and processes by alternative means.

41. I did not raise any material findings on the usefulness and reliability of the reported performance information for the following KPAs:

- KPA 2 - NTP group financials
- KPA 4 - Research outputs
- KPA 5 - Innovation value chain
- KPA 6 - Establish sustainable supply of LEU fuel and target plates
- KPA 7 - SAFARI-1 operation
- KPA 9 - Compliance to SHEQ, license and other regulatory requirements

Other matter

42. I draw attention to the matter below.

Adjustment of material misstatements

43. I identified material misstatements in the annual performance report submitted for auditing. These material misstatements were on the reported performance information of NTP group financials. As management subsequently corrected the misstatements, I did not raise any material findings on the usefulness and reliability of the reported performance information.

REPORT ON THE AUDIT OF COMPLIANCE WITH LEGISLATION

Introduction and scope

44. In accordance with the PAA and the general notice issued in terms thereof, I have a responsibility to report material findings on the compliance of the public entity with specific matters in key legislation. I performed procedures to identify findings but not to gather evidence to express assurance.

45. The material findings on compliance with specific matters in key legislations are as follows:

Annual financial statements

46. Financial statements were not submitted for auditing within two months after the end of financial year, as required by section 55(1)(c)(i) of the PFMA.

47. The financial statements submitted for auditing were not prepared in accordance with the prescribed financial reporting framework and supported by full and proper records, as required by section 55(1)(a) and (b) of the PFMA. Material misstatements identified by the auditors in the submitted financial statements were not adequately corrected and/or the supporting records could not be provided subsequently, which resulted in the financial statements receiving a disclaimer of opinion.

Expenditure management

48. Effective and appropriate steps were not taken to prevent irregular expenditure amounting to R50 752 000 as disclosed in note 40 to the annual financial statements, as required by section 51(1)(b)(ii) of the PFMA.



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Independent Auditor's Report

Strategic planning

49. An annual shareholder's compact was not concluded in consultation with the executive authority as required by treasury regulation 29.2.1.
50. A corporate plan including the affairs of the subsidiary was not submitted to the director-general head of the Department of Energy designated by the executive authority, as required by section 52(b) of the PFMA.

OTHER INFORMATION

51. The accounting authority is responsible for the other information. The other information comprises the information included in the annual report which includes the directors' report, the audit committee's report and the company secretary's certificate as required by the Companies Act. The other information does not include the consolidated and separate financial statements, the auditor's report and those selected KPAs presented in the annual performance report that have been specifically reported in this auditor's report.52. My disclaimer of opinion on the financial statements and findings on the reported performance information and compliance with legislation do not cover the other information and I do not express an audit opinion or any form of assurance conclusion thereon.
53. In connection with my audit, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements and the selected KPAs as presented in the annual performance report, or my knowledge obtained in the audit, or otherwise appears to be materially misstated.
54. If, based on the work I have performed on the other information obtained prior to the date of this auditor's report, I conclude that there is a material misstatement of this other information, I am required to report that fact. I have nothing to report in this regard.

INTERNAL CONTROL DEFICIENCIES

55. I considered internal control relevant to my audit of the consolidated and separate financial statements, reported performance information and compliance with applicable legislation; however, my objective was not to express any form of assurance on it. The matters reported below are limited to the significant internal control deficiencies that resulted in the basis for the disclaimer of opinion, the findings on the annual performance report and the findings on compliance with legislation included in this report.
56. The accounting authority did not exercise adequate oversight responsibility regarding compliance with laws and regulations and related internal controls which resulted in instances of non-compliance with applicable laws and regulations.
57. Senior management did not prepare accurate annual financial statements and a performance report that were supported and evidenced by reliable evidence, resulting in a disclaimed opinion on the financial statements and material findings on the annual performance report as well as compliance with applicable laws and regulations.

Auditor - General

Johannesburg

20 November 2019



AUDITOR - GENERAL
SOUTH AFRICA

Independent Auditor's Report

ANNEXURE – AUDITOR-GENERAL'S RESPONSIBILITY FOR THE AUDIT

1. As part of an audit in accordance with the ISAs, I exercise professional judgement and maintain professional scepticism throughout my audit of the consolidated and separate financial statements, and the procedures performed on reported performance information for selected KPAs and on the public entity's compliance with respect to the selected subject matters.

FINANCIAL STATEMENTS

2. In addition to my responsibility for the audit of the consolidated and separate financial statements as described in this auditor's report, I also:
 - identify and assess the risks of material misstatement of the consolidated and separate financial statements whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control
 - obtain an understanding of internal control relevant to the audit 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 public entity's internal control
 - evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the board of directors, which constitutes the accounting authority
 - conclude on the appropriateness of the board of directors, which constitutes the accounting authority's use of the going concern basis of accounting in the preparation of the financial statements. I also conclude, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the South African Nuclear Energy Corporation SOC Limited and its subsidiaries ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements about the material uncertainty or, if such disclosures are inadequate, to modify the opinion on the financial statements. My conclusions are based on the information available to me at the date of this auditor's report. However, future events or conditions may cause a public entity to cease continuing as a going concern
 - evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation
 - obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. I am responsible for the direction, supervision and performance of the group audit. I remain solely responsible for my audit opinion

COMMUNICATION WITH THOSE CHARGED WITH GOVERNANCE

3. I communicate with the accounting authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.
4. I also confirm to the accounting authority that I have complied with relevant ethical requirements regarding independence, and communicate all relationships and other matters that may reasonably be thought to have a bearing on my independence and, where applicable, related safeguards.



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Consolidated and Separate Statement of Financial Position as at 31 March 2019

	Note(s)	Group				Company	
		2019	2018	2017	2019	2018	2017
			Restated*			Restated*	
		R '000	R '000	R '000	R '000	R '000	R '000
Assets							
Non-Current Assets							
Property, plant and equipment	5	1,364,172	1,309,839	1,348,287	867,662	904,905	1,027,061
Investment property	4	42,990	46,007	18,027	214,433	126,328	63,212
Goodwill		37,514	37,514	11,357	-	-	-
Intangible assets		31,728	37,219	10,285	-	-	-
Investments in subsidiaries	6	-	-	-	220,701	220,701	262,702
Investments in associates	7	4,333	148	2,405	2	2	2
Loans to group companies	8	-	-	-	50,351	-	-
Other financial assets	9	230,961	853,634	453,566	230,925	443,883	453,526
Deferred tax	10	79,979	19,509	30,657	-	-	-
Decommissioning and Decontamination of Stage 1	41	3,556,000	3,309,472	2,727,063	3,556,000	3,309,472	2,727,063
Decommissioning and Decontamination of Stage 2	41	151,163	198,064	152,941	151,163	198,064	152,941
Vaalputs After Care	42	3,389	3,766	4,142	3,389	3,766	4,142
		5,502,229	5,815,172	4,758,730	5,294,626	5,207,121	4,690,649
Current Assets							
Inventories	11	309,440	283,223	238,068	41,389	66,115	22,765
Loans to group companies	8	3,407	66,149	3,327	-	1,515	756
Trade and other receivables	12	406,380	459,479	198,360	93,558	123,152	147,701
Other financial assets	9	675,537	719,106	784,009	673,798	282,003	246,812
Prepayments		6,033	57,656	6,752	6,033	56,006	78
Current tax receivable		15,429	26,072	10,733	-	-	-
Cash and cash equivalents	13	370,868	507,697	99,697	16,717	14,822	37,232
		1,787,094	2,119,382	1,340,946	831,495	543,613	455,344
Non-current assets of discontinued operations	14	3,448	-	-	-	-	-
Total Assets		7,292,771	7,934,554	6,099,676	6,126,121	5,750,734	5,145,993
Equity and Liabilities							
Equity							
Equity Attributable to Equity Holders of Parent							
Share capital	15	2,205	2,205	2,205	2,205	2,205	2,205
Reserves		(128,550)	690,138	345,000	601,679	534,843	483,212
Accumulated loss		885,068	798,746	704,555	(465,359)	(593,163)	(396,484)
		758,723	1,491,089	1,051,760	138,525	(56,115)	88,933
Non-controlling interest		(1,592)	58,579	52,583	-	-	-
		757,131	1,549,668	1,104,343	138,525	(56,115)	88,933



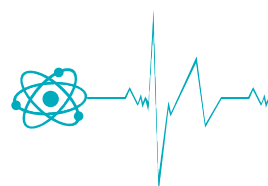
The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Consolidated and Separate Statement of Financial Position as at 31 March 2019

	Note(s)	Group			Company		
		2019	2018	2017	2019	2018	2017
			Restated*			Restated*	
		R '000	R '000	R '000	R '000	R '000	R '000
Liabilities							
Non-Current Liabilities							
Vaalputs after care	42	91,454	83,314	76,792	91,454	83,314	76,792
Other financial liabilities	16	2,932	4,405	5,475	-	-	-
Finance lease liabilities	17	3,819	2,300	3,549	1,385	2,239	2,690
Retirement benefit obligation	18	305,636	345,672	371,953	280,359	316,642	346,471
Deferred income	19	539,209	442,850	453,558	539,209	442,850	453,558
Deferred tax	10	4,683	259	374	-	-	-
Provisions	20	571,949	516,110	228,393	469,493	428,535	381,845
Investment contributions for future liabilities	43	40,014	37,693	43,153	40,014	37,693	35,653
Decommissioning and Decontamination stage 1	41	3,556,000	3,309,472	2,727,063	3,556,000	3,309,472	2,727,063
Decommissioning and Decontamination stage 2	41&48	541,472	541,754	449,951	541,472	541,754	449,951
		5,657,168	5,283,829	4,360,261	5,519,386	5,162,499	4,474,023
Current Liabilities							
Trade and other payables	21	503,779	466,277	81,191	49,761	93,473	127,080
Loans from group companies	8	3,407	66,149	17	42,532	59,081	-
Other financial liabilities	16	3,439	9,446	7,693	1,118	5,949	756
Finance lease liabilities	17	3,070	649	1,756	1,840	450	1,058
Operating lease liability		-	-	15	-	-	-
Retirement benefit obligation	18	34,482	33,489	23,808	34,482	33,489	22,652
Deferred income	19	23,442	137,097	140,804	23,442	137,097	140,804
Current tax payable		-	282	1,100	-	-	-
Provisions	20	97,937	93,729	138,921	57,196	51,023	45,894
Amounts received in advance	48	162,662	261,939	113,755	237,839	258,788	142,946
Deposits received		-	-	1,125	-	-	-
Bank overdraft	13	45,959	32,000	124,887	20,000	5,000	101,847
		878,177	1,101,057	635,072	468,210	644,350	583,037
Liabilities of discontinued operations	14	295	-	-	-	-	-
Total Liabilities		6,535,640	6,384,886	4,995,333	5,987,596	5,806,849	5,057,060
Total Equity and Liabilities		7,292,771	7,934,554	6,099,676	6,126,121	5,750,734	5,145,993



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Consolidated and Separate Statement of Comprehensive Income for the year ended 31 March 2019

	Note(s)	Group			Company		
		2019	2018	2017	2019	2018	2017
			Restated*			Restated*	
		R '000	R '000	R '000	R '000	R '000	R '000
Continuing operations							
Revenue	26	2,103,843	2,507,279	2,189,360	1,030,271	1,090,760	955,277
Cost of sales	11	(1,514,122)	(1,445,341)	(977,972)	(258,389)	(256,013)	(254,571)
Gross profit		589,721	1,061,938	1,211,388	771,882	834,747	700,706
Other income		454,701	159,229	88,707	364,611	79,425	16,669
Other operating expenses		(1,159,277)	(1,140,410)	(1,143,054)	(937,767)	(1,005,282)	(918,320)
Government Grant Income (Decommissioning and Decontamination Stage 1)	41	18,431	368,820	264,857	18,431	368,820	264,857
Acceptance of Decommission and Decontamination Stage 1	41	(18,431)	(368,820)	(264,858)	(18,431)	(368,820)	(264,857)
Administration and fees		(127,283)	(154,492)	(154,492)	(133,097)	(185,802)	-
Operating (loss) profit	27	(242,138)	(73,735)	2,548	65,629	(276,912)	(200,945)
Investment income	28	323,710	321,519	321,248	294,081	364,659	313,920
Fair value adjustments		3,022	(38,699)	2,919	9,330	(27,928)	5,883
Finance costs	29	(286,768)	(278,290)	(259,170)	(279,162)	(256,498)	(243,647)
Income from equity accounted investments		514	-	-	-	-	-
(Loss) profit before taxation		(201,660)	(69,205)	67,545	89,878	(196,679)	(124,789)
Taxation	30	55,407	(37,742)	(96,603)	-	-	-
(Loss) profit from continuing operations		(146,253)	(106,947)	(29,058)	89,878	(196,679)	(124,789)
Discontinued operations							
(Loss) profit from discontinued operations	14	(1,168)	(41)	130	-	-	-
(Loss) profit for the year		(147,421)	(106,988)	(28,928)	89,878	(196,679)	(124,789)
Other comprehensive income:							
Remeasurements on net defined benefit liability/asset		37,926	561	19,191	37,926	-	16,647
Gains on property revaluation		73,084	51,754	28,891	66,172	50,386	27,020
Exchange differences on translating foreign operations		-	-	21,689	-	-	-
Available-for-sale financial assets adjustments		658	1,245	1,388	664	1,245	1,388
Share of comprehensive income of associates and joint ventures		-	-	(47)	-	-	-
Other comprehensive income for the year net of taxation	31	111,668	53,560	71,112	104,762	51,631	45,055
Total comprehensive (loss) income for the year		(35,753)	(53,428)	42,184	194,640	(145,048)	(79,734)
Loss attributable to:							
Owners of the parent		(144,087)	(112,987)	(35,087)	89,878	(196,679)	(124,789)
Non-controlling interest		(3,334)	5,999	6,159	-	-	-
		(147,421)	(106,988)	(28,928)	89,878	(196,679)	(124,789)



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Consolidated and Separate Statement of Comprehensive Income for the year ended 31 March 2019

	Note(s)	Group			Company		
		2019	2018	2017	2019	2018	2017
		R '000	Restated*	R '000	R '000	Restated*	R '000
Total comprehensive (loss) income attributable to:							
Owners of the parent		(32,236)	(59,427)	36,025	194,640	(145,048)	(79,734)
Non-controlling interest		(3,517)	5,999	6,159	-	-	-
		(35,753)	(53,428)	42,184	194,640	(145,048)	(79,734)



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Consolidated and Separate Statement of Change in Equity for the year ended 31 March 2019



	Share capital	Foreign currency translation reserve	Revaluation reserve	Fair value adjustment assets-available-for-sale reserve	Total reserves	Accumulated loss	Total attributable to equity holders of the group / company	Non-controlling interest	Total equity
	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Group									
Restated* Balance at 31 March 2017	2,205	31,307	508,456	(194,763)	345,000	704,555	1,051,760	52,583	1,104,343
Total comprehensive income for the year	-	(32,289)	23,496	1,245	(7,548)	111,412	103,864	5,999	109,863
Transfer between reserves	-	-	-	91,546	91,546	-	91,546	-	91,546
Other movements	-	32,289	28,258	200,593	261,140	-	261,140	-	261,140
Dividends received/(paid)	-	-	-	-	-	(17,221)	(17,221)	-	(17,221)
Discontinued operations (Note 15)	-	-	-	-	-	-	-	(3)	(3)
Total changes	-	-	51,754	293,384	345,138	94,191	543,193	5,996	659,052
Balance at 31 March 2018	2,205	31,307	560,210	98,621	690,138	798,746	1,491,089	58,579	1,549,668
Other comprehensive income	-	(32,289)	23,496	1,245	(7,548)	111,412	103,864	5,999	109,863
Transfer between reserves	-	-	-	(800,884)	(800,884)	-	(800,884)	-	(800,884)
Other movements	-	32,289	49,588	(92,133)	(10,256)	-	(10,256)	(66,167)	(76,423)
Dividends received/(paid)	-	-	-	-	-	(25,090)	(25,090)	-	(25,090)
Discontinued Operations (Note 15)	-	-	-	-	-	-	-	(3)	(3)
Total changes	-	-	73,084	(891,772)	(818,688)	86,322	(732,366)	(60,171)	(792,537)
Balance at 31 March 2019	2,205	31,307	633,294	(793,151)	(128,550)	885,068	758,723	(1,592)	757,131

Note(s) 15 24&31

* See Note 38

The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Consolidated and Separate Statement of Change in Equity for the year ended 31 March 2019



	Share capital	Foreign currency translation reserve	Revaluation reserve	Fair value adjustment assets-available-for-sale reserve	Total reserves	Accumulated loss	Total attributable to equity holders of the group / company	Non-controlling interest	Total equity
	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Company Restated* Balance at 01 April 2017	2,205	-	477,405	5,807	483,212	(396,484)	88,933	-	88,933
Total comprehensive income for the year * Restated	-	-	50,386	1,245	51,631	(196,679)	(145,048)	-	(145,048)
Total comprehensive income for the year	-	-	50,386	1,245	51,631	(196,679)	(145,048)	-	(145,048)
Balance at 31 March 2018	2,205	-	527,791	7,052	534,843	(593,163)	(56,115)	-	(56,115)
Other comprehensive income * Restated	-	-	66,172	664	66,836	127,804	194,640	-	194,640
Total comprehensive income for the year	-	-	66,172	664	66,836	127,804	194,640	-	194,640
Balance at 31 March 2019	2,205	-	593,963	7,716	601,679	(465,359)	138,525	-	138,525

Note(s) 15 24&31

* Restated, for further details refer to note 38

* See Note 38



The South African Nuclear Energy Corporation SOC Limited and its Group Companies

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Financial statements for the year ended 31 March 2019

Consolidated and Separate Statement of Cash Flows for the year ended 31 March 2019

		Group				Company	
		2019	2018	2017	2019	2018	2017
		Note(s)	Restated*			Restated*	
		R '000	R '000	R '000	R '000	R '000	R '000
Cash flows from operating activities							
Cash receipts from customers		226,738	2,403,654	2,362,306	1,085,618	1,194,734	992,076
Cash paid to suppliers and employees		(1,368,758)	(1,270,300)	(2,364,453)	(1,232,523)	(1,280,286)	(1,148,364)
Cash (used in) generated from operations	32	(1,142,020)	1,133,354	(2,147)	(146,905)	(85,552)	(156,288)
Interest income		77,771	98,530	114,784	47,445	52,106	50,371
Finance costs		(9,262)	(7,323)	(19,061)	(1,661)	(947)	(6,642)
Dividends received/(paid)		(23,784)	(17,221)	233	-	-	-
Tax received (paid)	33	4,936	(51,348)	(102,054)	-	-	-
Cash flows from discontinued operations		-	-	-	-	-	-
Net cash from operating activities		(1,092,359)	1,155,992	(8,245)	(101,121)	(34,393)	(112,559)
Cash flows from investing activities							
Purchase of property, plant and equipment	5	(21,927)	(59,359)	(104,730)	(34,094)	(26,104)	(56,175)
Proceeds from sale of property, plant and equipment	5	2,219	2,745	2,506	-	18,728	-
Purchase of other intangible assets		(47,911)	(162)	(162)	-	-	-
Net movement in financial assets		-	(334,940)	-	-	(25,548)	-
Loan to group companies		-	-	-	(50,351)	-	-
Proceeds/(payments) of related party loans		-	-	-	1,515	(1,165)	3,123
Sale of financial assets		265,000	96,726	105,228	265,000	(749)	105,228
Purchase of financial assets		766,355	(335,165)	(25,606)	(78,724)	(3,613)	(31,100)
Dividends received		1,303	235	853	20,489	107,216	61,074
Net cash from investing activities		965,039	(629,920)	(21,911)	123,835	68,765	82,150
Cash flows from financing activities							
Proceeds on share issue	15	-	9	-	-	-	-
Change in loans from group companies		(7,480)	683	(18,595)	(4,831)	5,193	756
Movement in investment contributions for future liabilities		2,321	(5,460)	(4,896)	2,321	2,040	2,604
Movement in deferred Grant Income	19	(17,296)	(14,415)	4,382	(17,296)	(14,415)	4,382
Movement in loans to directors, managers and employees		-	-	-	(16,549)	48,306	-
Repayment of shareholders loan		-	1	-	-	-	-
Finance lease payments		293	(6,003)	(2,897)	536	(1,059)	(1,339)
Net cash from financing activities		(23,468)	(25,185)	(6,897)	(35,819)	40,065	6,403
Total cash movement for the year		(150,788)	500,887	(37,053)	(13,105)	74,437	(24,006)
Cash at the beginning of the year		475,697	(25,190)	11,863	9,822	(64,615)	(40,609)
Total cash at end of the year	13	324,909	475,697	(25,190)	(3,283)	9,822	(64,615)

* See Note 38

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Accounting Policies

1. BASIS OF PREPARATION

Statement of compliance

The consolidated and separate Annual financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS"), the requirements of the Public Finance Management Act of South Africa, 1999 (Act No.1 of 1999) (PFMA) and the Companies Act of South Africa, 2008 (Act No 71 of 2008) (Companies Act). The Annual Financial Statements have been prepared on the historical cost basis except for certain properties and financial instruments that are measured at revalued amounts or fair values, as explained in the accounting policies below. Historical cost is generally based on the fair value of the consideration given in exchange for goods and services. These accounting policies are consistent with the previous period.

Accordingly, the Group has prepared annual financial statements, which comply with IFRS applicable for periods ending on or after 31 March 2019, together with the comparative period data as at and for the year ended 31 March 2018, as described in the accounting policies.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Group takes into account the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and/or disclosure purpose in these consolidated financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of IFRS 2, leasing transactions that are within the scope of IAS 17, and measurements that have some similarities to fair value but are not fair value, such as net realisable value in IAS 2 or value in use in IAS 36.

In addition, for financial reporting purposes, fair value measurements are categorised into Level 1, 2 or 3 based on the degree to which the inputs to the fair values measurements are observable and the significance of the inputs to the fair value measurements in its entirety, which are described as follows:

- Level 1 Inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at the measurement date;
- Level 2 Inputs are inputs, other than quoted prices included within Level 1, that are observable for the asset or liability, either directly or indirectly; and
- Level 3 inputs are observable inputs for the asset or liability.

The principal accounting policies are set out below.

The draft annual financial statements that are submitted to the Auditor General on 31 May of each year are final.

1.1 Consolidation

Basis of consolidation

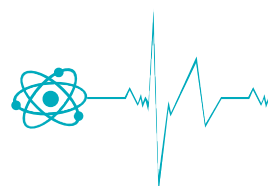
The consolidated Annual Financial Statements incorporate the Annual Financial Statements of the Necsa and its subsidiaries. Control is achieved when Necsa or its Subsidiaries:

- has power over the investee;
- is exposed, or has rights, to variable returns from its involvement with the investee; and
- has the ability to use its power to affect its returns.

When Necsa or its Subsidiaries has less than a majority of the voting rights of an investee, it has power over the investee when the voting rights are sufficient to give it the practical ability to direct the relevant activities of the investee unilaterally. Necsa considers all relevant facts and circumstances in assessing whether or not Necsa or its Subsidiaries' voting rights in an investee are sufficient to give power, including:

- the size of the Company's holding of voting rights relative to the size and dispersion of holdings of the other vote holders;
- potential voting rights held by the Company, other vote holders or other parties;
- rights arising from other contractual arrangements; and
- any additional facts and circumstances that indicate that the Company has, or does not have, the current ability to direct the relevant activities at the time that decisions need to be made, including voting patterns at previous shareholders' meetings.

Consolidation of a subsidiary begins when Necsa or its Subsidiaries obtains control over the subsidiary and ceases when Necsa or its Subsidiaries loses control of the subsidiary. Specifically, income and expenses of a subsidiary acquired or disposed of during the year are included in the consolidated statement of profit or loss and other comprehensive income from the date Necsa or its Subsidiaries gains control until the date when Necsa or its Subsidiaries ceases to control the subsidiary.



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Accounting Policies

1.1 Consolidation (continued)

Profit or loss and each component of other comprehensive income are attributed to the owners of Necsa and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners of the Necsa and to the non-controlling interests.

All intragroup assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

Investment in associates

An associate is an entity over which the group has significant influence and which is neither a subsidiary nor a joint venture. Significant influence is the power to participate in the financial and operating policy decisions of the investee but is not control or joint control over those policies.

The results of assets and liabilities of associates are incorporated in these consolidated financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with IFRS 5 Non-current Assets Held for Sale and Discontinued Operations. Under the equity method, an investment in an associate is initially recognised in the consolidated statement of financial position at cost and adjusted thereafter to recognise the Group's share of the profit or loss and other comprehensive income of the associate. When the Group's share of losses of an associate exceeds the Group's interest in that associate (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate), the Group discontinues recognising its share of further losses. Additional losses are classified as liabilities when recognised, only to the extent that the

Group has incurred legal or constructive obligations or made payments on behalf of the associate.

The requirements of IFRS 9 are applied to determine whether it is necessary to recognise any impairment loss with respect to the Group's investment in an associate. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with IAS 36 Impairment of Assets as a single asset by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its carrying amount. Any impairment loss recognised forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognised in accordance with IAS 36 to the extent that the recoverable amount of the investment subsequently increases.

When a Group entity transacts with its associate, profits and losses resulting from the transactions with the associate are recognised in the Group's consolidated financial statements only to the extent of interests in the associate that are not related to the Group.

1.2 Investment property

Investment properties are properties held to earn rentals.

Investment property is initially recognised at cost. Transaction costs are included in the initial measurement.

Costs include costs incurred initially and costs incurred subsequently to add to, or to replace a part of, or service a property. If a replacement part is recognised in the carrying amount of the investment property, the carrying amount of the replaced part is derecognised.

Fair value

Subsequent to initial measurement investment property is measured at fair value.

A gain or loss arising from a change in fair value is included in net profit or loss of the period in which it arises.

An investment property is derecognised upon disposal or when the investment property is permanently withdrawn from use and no future economic benefits are expected from the disposal. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property is derecognised.

1.3 Property, plant and equipment

Property, plant and equipment is initially measured at cost.

Costs include costs incurred initially to acquire or construct an item of property, plant and equipment 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 property, plant and equipment, the carrying amount of the replaced part is derecognised.

The initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located is also included in the cost of property, plant and equipment, where the entity is obliged to incur such expenditure, and where the obligation arises as a result of acquiring the asset or using it for purposes other than the production of inventories.

Plant and equipment is stated at cost less accumulated depreciation and any impairment losses.

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Accounting Policies

1.3 Property, plant and equipment (continued)

Land and buildings is carried at revalued amount, being the fair value at the date of revaluation less any subsequent accumulated depreciation and subsequent accumulated impairment losses.

Revaluations are performed with sufficient regularity such that the carrying amount does not differ materially from that which would be determined using fair value as the end of the reporting period.

The frequency of revaluations depends upon the changes in fair values of the items of property, plant and equipment being revalued. Some items of property, plant and equipment experience significant and volatile changes in fair value, thus necessitating annual revaluation. Such frequent revaluations are unnecessary for items of property, plant and equipment with only insignificant changes in fair value. Instead, it may be necessary to revalue the item every three to five years.

When an item of property, plant and equipment is revalued, any accumulated depreciation at the date of the revaluation is eliminated against the gross carrying amount of the asset and the net amount restated to the revalued amount of the asset.

Any increase in an asset's carrying amount, as a result of a revaluation, is recognised to other comprehensive income and accumulated in the revaluation surplus in equity. The increase is recognised in profit or loss to the extent that it reverses a revaluation decrease of the same asset previously recognised in profit or loss.

Any increase in an asset's carrying amount, as a result of a revaluation, is recognised in profit or loss in the current period. The decrease is recognised in other comprehensive income to the extent of any credit balance existing in the revaluation surplus in respect of that asset. The decrease recognised in other comprehensive income reduces the amount accumulated in the revaluation surplus in equity.

The revaluation surplus in equity related to a specific item of property, plant and equipment is transferred directly to retained earnings when the asset is derecognised.

Property, plant and equipment is depreciated on the straight line basis over their expected useful lives to their estimated residual value. The useful lives of items of property, plant and equipment have been assessed as follows:

Item	Range of useful lives
Land	indefinite
Buildings	10 - 50 years
Plant	5 - 50 years
Furniture and fixtures	2 - 22 years
Motor vehicles and transport containers	2 - 26 years
Office equipment	2 - 22 years
IT equipment	2 - 22 years
Research facilities	2 - 22 years
Leasehold improvements	2 - 10 years
Machinery and equipment	2 - 22 years
Component spares	2 - 10 years
Small capital items (less than R7000)	Not applicable - Depreciated immediately

The residual value, useful life and depreciation method of each asset are reviewed at the end of each reporting period. If the expectations differ from previous estimates, the change is accounted for as a change in accounting estimate.

The depreciation charge for each period is recognised in profit or loss unless it is included in the carrying amount of another asset.

An item of property, plant and equipment is derecognised upon disposal or when no future economic benefits are expected to arise from the continued use of the asset.

The gain or loss arising from the derecognition of an item of property, plant and equipment is included in profit or loss when the item is derecognised. The gain or loss arising from the derecognition of an item of property, plant and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item.

Assets held under finance leases are depreciated over their expected useful lives on the same basis as owned assets. However, when there is no reasonable certainty that ownership will be obtained by the end of the lease term, assets are depreciated over the shorter of the lease term and their useful lives.

1.4 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



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Accounting Policies

1.4 Intangible assets (continued)

- the cost of the asset can be measured reliably.

Intangible assets are initially recognised at cost.

Internally generated intangible assets - research and development expenditure

Expenditure on research (or on the research phase of an internal project) is recognised as an expense when it is incurred.

An intangible asset arising from development (or from the development phase of an internal project) is recognised when all of the following have been demonstrated:

- the technical feasibility of completing the intangible asset so that it will be available for use or sale.
- the intention to complete the intangible asset and use or sell it.
- the ability to use or sell the intangible asset.
- it will generate probable future economic benefits.
- how the intangible asset will generate probable future economic benefits.
- the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset.
- the ability to measure reliably the expenditure attributable to the intangible asset during its development.

The amount initially recognised for internally-generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria listed above. Where no internally-generated intangible asset can be recognised, development expenditure is recognised in profit or loss in the period in which it is incurred.

Subsequent to initial recognition, internally-generated intangible assets are reported at cost less accumulated amortisation and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

An intangible asset is regarded as having an indefinite useful life when, based on all relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows. Amortisation is not provided for these intangible assets, but they are tested for impairment annually and whenever there is an indication that the asset may be impaired. For all other intangible assets amortisation is provided on a straight-line basis over their useful life.

The amortisation period and the amortisation method for intangible assets are reviewed at the end of each reporting period.

Re-assessing the useful life of an intangible asset with a finite useful life after it was classified as indefinite is an indicator that the asset may be impaired. As a result the asset is tested for impairment and the remaining carrying amount is amortised over its useful life.

Internally generated brands, mastheads, publishing titles, customer lists and items similar in substance are not recognised as intangible assets.

Amortisation is provided to write down the intangible assets, on a straight line basis, to their residual values as follows:

Item	Useful lives
Patents, trademarks and other rights	20 years
Computer software	3 years

1.5 Investments in subsidiaries

Company financial statements

In the company's separate financial statements, investments in subsidiaries are carried at cost less any accumulated impairment. The cost of an investment in a subsidiary is the aggregate of:

- the fair value, at the date of exchange, of assets given, liabilities incurred or assumed, and equity instruments issued by the company; plus
- any costs directly attributable to the purchase of the subsidiary.

1.6 Investments in associates

Company financial statements

An investment in an associate is carried at cost less any accumulated impairment.

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Accounting Policies

1.7 Financial instruments - IFRS 9

Financial instruments held by the group are classified in accordance with the provisions of IFRS 9 Financial Instruments. Broadly, the classification possibilities, which are adopted by the group, as applicable, are as follows:

Financial assets which are equity instruments:

- Mandatorily at fair value through profit or loss; or
- Designated as at fair value through other comprehensive income. (This designation is not available to equity instruments which are held for trading or which are contingent consideration in a business combination).

Financial assets which are debt instruments:

- Amortised cost. (This category applies only when the contractual terms of the instrument give rise, on specified dates, to cash flows that are solely payments of principal and interest on principal, and where the instrument is held under a business model whose objective is met by holding the instrument to collect contractual cash flows); or
- Fair value through other comprehensive income. (This category applies only when the contractual terms of the instrument give rise, on specified dates, to cash flows that are solely payments of principal and interest on principal, and where the instrument is held under a business model whose objective is achieved by both collecting contractual cash flows and selling the instruments); or
- Mandatorily at fair value through profit or loss. (This classification automatically applies to all debt instruments which do not qualify as at amortised cost or at fair value through other comprehensive income); or
- Designated at fair value through profit or loss. (This classification option can only be applied when it eliminates or significantly reduces an accounting mismatch).
- Derivatives which are not part of a hedging relationship:
- Mandatorily at fair value through profit or loss.
- Financial liabilities:
- Amortised cost; or
- Mandatorily at fair value through profit or loss. (This applies to contingent consideration in a business combination or to liabilities which are held for trading); or
- Designated at fair value through profit or loss. (This classification option can be applied when it eliminates or significantly reduces an accounting mismatch; the liability forms part of a group of financial instruments managed on a fair value basis; or it forms part of a contract containing an embedded derivative and the entire contract is designated as at fair value through profit or loss).

Note 46 Financial instruments and risk management presents the financial instruments held by the group based on their specific classifications. All regular way purchases or sales of financial assets are recognised and derecognised on a trade date basis. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

The specific accounting policies for the classification, recognition and measurement of each type of financial instrument held by the group are presented below:

Loans receivable at amortised cost

Classification

Loans to /(from) group companies (note 8), are classified as financial assets subsequently measured at amortised cost.

They have been classified in this manner because the contractual terms of these loans give rise, on specified dates to cash flows that are solely payments of principal and interest on the principal outstanding, and the group's business model is to collect the contractual cash flows on these loans.

Recognition and measurement

Loans receivable are recognised when the group becomes a party to the contractual provisions of the loan. The loans are measured, at initial recognition, at fair value plus transaction costs, if any.

They are subsequently measured at amortised cost.



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Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

The amortised cost is the amount recognised on the loan initially, minus principal repayments, plus cumulative amortisation (interest) using the effective interest method of any difference between the initial amount and the maturity amount, adjusted for any loss allowance.

1.8 Impairment of tangible and intangible assets other than goodwill

Application of the effective interest method

Interest income is calculated using the effective interest method, and is included in profit or loss in investment income (note 28).

The application of the effective interest method to calculate interest income on a loan receivable is dependent on the credit risk of the loan as follows:

- The effective interest rate is applied to the gross carrying amount of the loan, provided the loan is not credit impaired. The gross carrying amount is the amortised cost before adjusting for a loss allowance.
- If a loan is purchased or originated as credit-impaired, then a credit-adjusted effective interest rate is applied to the amortised cost in the determination of interest. This treatment does not change over the life of the loan, even if it is no longer credit-impaired.
- If a loan was not purchased or originally credit-impaired, but it has subsequently become credit-impaired, then the effective interest rate is applied to the amortised cost of the loan in the determination of interest. If, in subsequent periods, the loan is no longer credit impaired, then the interest calculation reverts to applying the effective interest rate to the gross carrying amount.

Loans denominated in foreign currencies

When a loan receivable is denominated in a foreign currency, the carrying amount of the loan is determined in the foreign currency. The carrying amount is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised in profit or loss in the other operating gains (losses) (note 47).

Details of foreign currency risk exposure and the management thereof are provided in the specific loan notes and in the financial instruments and risk management (note 46).

Impairment

The group recognises a loss allowance for expected credit losses on all loans receivable measured at amortised cost. The amount of expected credit losses is updated at each reporting date to reflect changes in credit risk since initial recognition of the respective loans.

The group measures the loss allowance at an amount equal to lifetime expected credit losses (lifetime ECL) when there has been a significant increase in credit risk since initial recognition. If the credit risk on a loan has not increased significantly since initial recognition, then the loss allowance for that loan is measured at 12 month expected credit losses (12 month ECL).

Lifetime ECL represents the expected credit losses that will result from all possible default events over the expected life of a loan. In contrast, 12 month ECL represents the portion of lifetime ECL that is expected to result from default events on a loan that are possible within 12 months after the reporting date.

In order to assess whether to apply lifetime ECL or 12 month ECL, in other words, whether or not there has been a significant increase in credit risk since initial recognition, the group considers whether there has been a significant increase in the risk of a default occurring since initial recognition rather than at evidence of a loan being credit impaired at the reporting date or of an actual default occurring.

Credit risk

Details of credit risk related to loans receivable are included in the financial instruments and risk management (note 46).

Derecognition

Refer to the "derecognition" section of the accounting policy for the policies and processes related to derecognition. Any gains or losses arising on the derecognition of a loan receivable is included in profit or loss.

Debt instruments at fair value through other comprehensive income

Classification

The group holds certain investments in bonds and debentures which are classified as subsequently measured at fair value through other comprehensive income (note 31).

Accounting Policies

1.8 Impairment of tangible and intangible assets other than goodwill (continued)

They have been classified in this manner because the contractual terms of these debt instruments give rise, on specified dates to cash flows that are solely payments of principal and interest on the principal outstanding, and the objectives of the group's business model is achieved by both collecting the contractual cash flows on these instruments and by selling them.

Recognition and measurement

These debt instruments are recognised when the group becomes a party to the contractual provisions. They are measured, at initial recognition, at fair value plus transaction costs, if any.

They are subsequently measured at fair value.

Even though they are measured at fair value, the group determines the amortised cost of each instrument as if they were measured at amortised cost. The difference, at reporting date, between the amortised cost and the fair value of the debt instruments, is recognised in other comprehensive income and accumulated in equity in the reserve for valuation of investments.

The amortised cost is the amount recognised on the loan initially, minus principal repayments, plus cumulative amortisation (interest) using the effective interest method of any difference between the initial amount and the maturity amount, adjusted for any loss allowance.

Application of the effective interest method

Interest income is calculated using the effective interest method, and is included in profit or loss in investment income (note 28).

The application of the effective interest method to calculate interest income on debt instruments at fair value through other comprehensive income is dependent on the credit risk of the instrument as follows:

- The effective interest rate is applied to the gross carrying amount of the instrument, provided the instrument is not credit impaired.
- The gross carrying amount is the amortised cost before adjusting for a loss allowance.
- If a debt instrument is purchased or originated as credit-impaired, then a credit-adjusted effective interest rate is applied to the amortised cost in the determination of interest. This treatment does not change over the life of the instrument, even if it is no longer credit-impaired.
- If a debt instrument was not purchased or originally credit-impaired, but it has subsequently become credit-impaired, then the effective interest rate is applied to the amortised cost of the instrument in the determination of interest. If, in subsequent periods, the instrument is no longer credit impaired, then the interest calculation reverts to applying the effective interest rate to the gross carrying amount.

Debt instruments denominated in foreign currencies

When a debt instrument measured at fair value through other comprehensive income is denominated in a foreign currency, the amortised cost and the fair value (carrying amount) of the investment is determined in the foreign currency. The amortised cost and fair value is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any foreign exchange gains or losses arising on the amortised cost of the instrument are recognised in profit or loss in the other operating gains (losses) (note 47). The remaining foreign exchange gains or losses relate to the valuation adjustment and are included in other comprehensive income and are accumulated in equity in the reserve for valuation of investments.

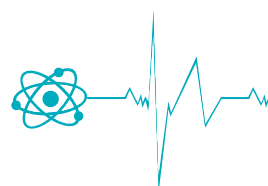
Details of foreign currency risk exposure and the management thereof are provided in the specific loan notes and in the financial instruments and risk management note (note 46).

Impairment

The group recognises a loss allowance for expected credit losses on all debt instruments measured at fair value through other comprehensive income. The amount of expected credit losses is updated at each reporting date to reflect changes in credit risk since initial recognition of the respective instruments.

The group measures the loss allowance at an amount equal to lifetime expected credit losses (lifetime ECL) when there has been a significant increase in credit risk since initial recognition. If the credit risk on a debt instrument has not increased significantly since initial recognition, then the loss allowance for that instrument is measured at 12 month expected credit losses (12 month ECL).

Lifetime ECL represents the expected credit losses that will result from all possible default events over the expected life of the instrument. In contrast, 12 month ECL represents the portion of lifetime ECL that is expected to result from default events that are possible within 12 months after the reporting date.



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Accounting Policies

1.8 Impairment of tangible and intangible assets other than goodwill (continued)

In order to assess whether to apply lifetime ECL or 12 month ECL, in other words, whether or not there has been a significant increase in credit risk since initial recognition, the group considers whether there has been a significant increase in the risk of a default occurring since initial recognition rather than at evidence of a debt instrument being credit impaired at the reporting date or of an actual default occurring.

Credit risk

Details of credit risk related to debt instruments at fair value through other comprehensive income are included in the specific notes and the financial instruments and risk management (note 46).

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

On derecognition of a debt instrument at fair value through other comprehensive income, the cumulative gain or loss on that instrument which was previously accumulated in equity in the reserve for valuation of investments is reclassified to profit or loss.

Trade and other receivables

Classification

Trade and other receivables, excluding, when applicable, VAT and prepayments, are classified as financial assets subsequently measured at amortised cost (note 12).

They have been classified in this manner because their contractual terms give rise, on specified dates to cash flows that are solely payments of principal and interest on the principal outstanding, and the group's business model is to collect the contractual cash flows on trade and other receivables.

Recognition and measurement

Trade and other receivables are recognised when the group becomes a party to the contractual provisions of the receivables. They are measured, at initial recognition, at fair value plus transaction costs, if any.

They are subsequently measured at amortised cost.

The amortised cost is the amount recognised on the receivable initially, minus principal repayments, plus cumulative amortisation (interest) using the effective interest method of any difference between the initial amount and the maturity amount, adjusted for any loss allowance.

Application of the effective interest method

For receivables which contain a significant financing component, interest income is calculated using the effective interest method, and is included in profit or loss in investment income (note 28).

The application of the effective interest method to calculate interest income on trade receivables is dependent on the credit risk of the receivable as follows:

- The effective interest rate is applied to the gross carrying amount of the receivable, provided the receivable is not credit impaired.
- The gross carrying amount is the amortised cost before adjusting for a loss allowance.
- If a receivable is purchased or originated as credit-impaired, then a credit-adjusted effective interest rate is applied to the amortised cost in the determination of interest. This treatment does not change over the life of the receivable, even if it is no longer credit-impaired.
- If a receivable was not purchased or originally credit-impaired, but it has subsequently become credit-impaired, then the effective interest rate is applied to the amortised cost of the receivable in the determination of interest. If, in subsequent periods, the receivable is no longer credit impaired, then the interest calculation reverts to applying the effective interest rate to the gross carrying amount.

Trade and other receivables denominated in foreign currencies

When trade and other receivables are denominated in a foreign currency, the carrying amount of the receivables are determined in the foreign currency. The carrying amount is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised in profit or loss in other operating gains (losses) (note 47).

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Accounting Policies

1.8 Impairment of tangible and intangible assets other than goodwill (continued)

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management (note 46).

Impairment

The group recognises a loss allowance for expected credit losses on trade and other receivables, excluding VAT and prepayments. The amount of expected credit losses is updated at each reporting date.

The group measures the loss allowance for trade and other receivables at an amount equal to lifetime expected credit losses (lifetime ECL), which represents the expected credit losses that will result from all possible default events over the expected life of the receivable.

Credit risk

Details of credit risk are included in the trade and other receivables note (note 12) and the financial instruments and risk management note (note 46).

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

Any gains or losses arising on the derecognition of trade and other receivables is included in profit or loss in the line item (note).

Investments in equity instruments

Classification

Investments in equity instruments are presented in note 47. They are classified as mandatorily at fair value through profit or loss. As an exception to this classification, the group may make an irrevocable election, on an instrument by instrument basis, and on initial recognition, to designate certain investments in equity instruments as at fair value through other comprehensive income.

The designation as at fair value through other comprehensive income is never made on investments which are either held for trading or contingent consideration in a business combination.

Recognition and measurement

Investments in equity instruments are recognised when the group becomes a party to the contractual provisions of the instrument. The investments are measured, at initial recognition, at fair value. Transaction costs are added to the initial carrying amount for those investments which have been designated as at fair value through other comprehensive income. All other transaction costs are recognised in profit or loss.

Investments in equity instruments are subsequently measured at fair value with changes in fair value recognised either in profit or loss or in other comprehensive income (and accumulated in equity in the reserve for valuation of investments), depending on their classification. Details of the valuation policies and processes are presented in note 44.

Fair value gains or losses recognised on investments at fair value through profit or loss are included in other operating gains (losses) (note 47).

Dividends received on equity investments are recognised in profit or loss when the group's right to receive the dividends is established, unless the dividends clearly represent a recovery of part of the cost of the investment. Dividends are included in investment income (note 28).

Investments denominated in foreign currencies

When an investment in an equity instrument is denominated in a foreign currency, the fair value of the investment is determined in the foreign currency. The fair value is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised in profit or loss as part of the fair value adjustment for investments which are classified as at fair value through profit or loss. Foreign exchange gains or losses arising on investments at fair value through other comprehensive income are recognised in other comprehensive income and accumulated in equity in the reserve for valuation of investments.

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management (note 46).

Impairment

Investments in equity instruments are not subject to impairment provisions.



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1.8 Impairment of tangible and intangible assets other than goodwill (continued)

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

The gains or losses which accumulated in equity in the reserve for valuation of investments for equity investments at fair value through other comprehensive income are not reclassified to profit or loss on derecognition. Instead, the cumulative amount is transferred directly to retained earnings.

Investments in debt instruments at fair value through profit or loss

Classification

Certain investments in debt instruments are classified as mandatorily at fair value through profit or loss. These investments do not qualify for classification at amortised cost or at fair value through other comprehensive income because either the contractual terms of these instruments do not give rise, on specified dates to cash flows that are solely payments of principal and interest on the principal outstanding, or the objectives of the group business model are met by selling the instruments rather than holding them to collect the contractual cash flows.

The group hold investments in debentures and corporate bonds (note) which are mandatorily at fair value through profit or loss.

The group has designated certain investments in debt instruments as at fair value through profit or loss. The reason for the designation is to reduce or eliminate an accounting mismatch which would occur if the instruments were not classified as such. Refer to note) for details.

Recognition and measurement

Investments in debt instruments at fair value through profit or loss are recognised when the group becomes a party to the contractual provisions of the instrument. The investments are measured, at initial recognition and subsequently, at fair value. Transaction costs are recognised in profit or loss.

Fair value gains or losses are included in other operating gains (losses) (note 47). Details of the valuation policies and processes are presented in note 44.

Interest received on debt instruments at fair value through profit or loss are included in investment income (note 28).

Investments denominated in foreign currencies

When an investment in a debt instrument at fair value through profit or loss is denominated in a foreign currency, the fair value of the investment is determined in the foreign currency. The fair value is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised as part of the fair value adjustment in profit or loss.

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management (note 46).

Impairment

Investments in debt instruments at fair value through profit or loss are not subject to impairment provisions.

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

Non-hedging derivatives

Classification

Non-hedging derivatives are classified as mandatorily at fair value through profit or loss.

The group enters into a variety of derivative financial instruments in order to manage its exposure to foreign exchange risk and cash flow interest rate risk. Derivatives held by the group which are not in designated hedging relationships, include forward exchange contracts and interest rate swaps.

Recognition and measurement

Derivatives are recognised when the group becomes a party to the contractual provisions of the instrument. They are measured, at initial recognition and subsequently, at fair value. Transaction costs are recognised in profit or loss.



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1.8 Impairment of tangible and intangible assets other than goodwill (continued)

Fair value gains or losses are included in other operating gains (losses) (note 47). Details of the valuation policies and processes are presented in note 44.

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

Borrowings and loans from related parties

Recognition and measurement

Borrowings and loans from related parties are recognised when the group becomes a party to the contractual provisions of the loan. The loans are measured, at initial recognition, at fair value plus transaction costs, if any.

They are subsequently measured at amortised cost using the effective interest method.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial liability, or (where appropriate) a shorter period, to the amortised cost of a financial liability.

Interest expense, calculated on the effective interest method, is included in profit or loss in finance costs (note 29.)

Borrowings expose the group to liquidity risk and interest rate risk. Refer to note 46 for details of risk exposure and management thereof.

Loans denominated in foreign currencies

When borrowings are denominated in a foreign currency, the carrying amount of the loan is determined in the foreign currency. The carrying amount is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised in profit or loss in the other operating gains (losses) (note 47).

Details of foreign currency risk exposure and the management thereof are provided in the specific loan notes and in the financial instruments and risk management (note 46).

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

Trade and other payables

Classification

Trade and other payables (note 21), excluding VAT and amounts received in advance, are classified as financial liabilities subsequently measured at amortised cost.

Recognition and measurement

They are recognised when the group becomes a party to the contractual provisions, and are measured, at initial recognition, at fair value plus transaction costs, if any.

They are subsequently measured at amortised cost using the effective interest method.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial liability, or (where appropriate) a shorter period, to the amortised cost of a financial liability.

If trade and other payables contain a significant financing component, and the effective interest method results in the recognition of interest expense, then it is included in profit or loss in finance costs (note 29).

Trade and other payables expose the group to liquidity risk and possibly to interest rate risk. Refer to note 46 for details of risk exposure and management thereof.



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1.8 Impairment of tangible and intangible assets other than goodwill (continued)

Trade and other payables denominated in foreign currencies

When trade payables are denominated in a foreign currency, the carrying amount of the payables are determined in the foreign currency. The carrying amount is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised in profit or loss in the other operating gains (losses) (note 47).

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management note (note 46).

Derecognition

Refer to the “derecognition” section of the accounting policy for the policies and processes related to derecognition.

Financial liabilities at fair value through profit or loss

Classification

Financial liabilities which are held for trading are classified as financial liabilities mandatorily at fair value through profit or loss. Refer to note 16. When a financial liability is at contingent consideration in a business combination, the group classifies it as a financial liability at fair value through profit or loss. Refer to note 16.

The group, does, from time to time, designate certain financial liabilities as at fair value through profit or loss. The reason for the designation is to reduce or significantly eliminate an accounting mismatch which would occur if the instruments were not classified as such; or if the instrument forms part of a group of financial instruments which are managed and evaluated on a fair value basis in accordance with a documented management strategy; or in cases where it forms part of a contract containing an embedded derivative and IFRS 9 permits the entire contract to be measured at fair value through profit or loss. Refer to note 16 for details.

Recognition and measurement

Financial liabilities at fair value through profit or loss are recognised when the group becomes a party to the contractual provisions of the instrument. They are measured, at initial recognition and subsequently, at fair value. Transaction costs are recognised in profit or loss.

Fair value gains or losses recognised on investments at fair value through profit or loss are included in other operating gains (losses) (note 47). For financial liabilities designated at fair value through profit or loss, the portion of fair value adjustments which are attributable to changes in

the group's own credit risk, are recognised in other comprehensive income and accumulated in equity in the reserve for valuation of liabilities, rather than in profit or loss. However, if this treatment would create or enlarge an accounting mismatch in profit or loss, then that portion is also recognised in profit or loss.

Interest paid on financial liabilities at fair value through profit or loss is included in finance costs (note 29).

Financial liabilities denominated in foreign currencies

When a financial liability at fair value through profit or loss is denominated in a foreign currency, the fair value of the instrument is determined in the foreign currency. The fair value is then translated to the Rand equivalent using the spot rate at the end of each reporting period. Any resulting foreign exchange gains or losses are recognised as part of the fair value adjustment in profit or loss. To the extent that the foreign exchange gain or loss relates to the portion of the fair value adjustment recognised in other comprehensive income, that portion of foreign exchange gain or loss is included in the fair value adjustment recognised in other comprehensive income.

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management (note 46).

Derecognition

Refer to the derecognition section of the accounting policy for the policies and processes related to derecognition.

The changes in fair value attributable to changes in own credit risk which accumulated in equity for financial liabilities which were designated at fair value through profit or loss are not reclassified to profit or loss. Instead, they are transferred directly to retained earnings on derecognition.

Financial guarantee contracts

A financial guarantee contract is a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payments when due in accordance with the terms of a debt instrument.

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Financial guarantee contracts issued by the group are initially measured at their fair values and, if not designated as at FVTPL and do not arise from a transfer of a financial asset, are subsequently measured at the higher of:

- the amount of the loss allowance determined in accordance with IFRS 9; and
- the amount initially recognised less, where appropriate, cumulative amount of income recognised in accordance with the revenue recognition policies.

Commitments to provide a loan at a below-market interest rate

Commitments to provide a loan at a below-market interest rate are initially measured at their fair values and, if not designated as at FVTPL, are subsequently measured at the higher of:

- the amount of the loss allowance determined in accordance with IFRS 9; and
- the amount initially recognised less, where appropriate, cumulative amount of income recognised in accordance with the revenue recognition policies.

Refer to note 34 for details of commitments to provide a loan at a below-market interest rate

Cash and cash equivalents

Cash and cash equivalents are stated at carrying amount which is deemed to be fair value.

Bank overdrafts

Bank overdrafts are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Derecognition

Financial assets

The group derecognises a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another party. If the group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the group recognises its retained interest in the asset and an associated liability for amounts it may have to pay. If the group retains substantially all the risks and rewards of ownership of a transferred financial asset, the group continues to recognise the financial asset and also recognises a collateralised borrowing for the proceeds received.

Financial liabilities

The group derecognises financial liabilities when, and only when, the group obligations are discharged, cancelled or they expire. The difference between the carrying amount of the financial liability derecognised and the consideration paid and payable, including any non-cash assets transferred or liabilities assumed, is recognised in profit or loss.

Reclassification

Financial assets

The group only reclassifies affected financial assets if there is a change in the business model for managing financial assets. If a reclassification is necessary, it is applied prospectively from the reclassification date. Any previously stated gains, losses or interest are not restated.

The reclassification date is the beginning of the first reporting period following the change in business model which necessitates a reclassification.

Financial liabilities

Financial liabilities are not reclassified.

1.9 Financial instruments - IAS39 comparatives

Classification

The group classifies financial assets and financial liabilities into the following categories:

- Financial assets at fair value through profit or loss - held for trading
- Held-to-maturity investments
- Loans and receivables



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1.9 Financial instruments - IAS39 comparatives (continued)

- Available-for-sale financial assets
- Financial liabilities at fair value through profit or loss - held for trading
- Financial liabilities measured at amortised cost

Classification depends on the purpose for which the financial instruments were obtained / incurred and takes place at initial recognition. Classification is re-assessed on an annual basis, except for derivatives and financial assets designated at fair value through profit or loss, which may not be classified out of the fair value through profit or loss category.

Initial recognition and measurement

Financial instruments are recognised initially when the group becomes a party to the contractual provisions of the instruments.

The group 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 instruments are measured initially at fair value.

For financial instruments which are not at fair value through profit or loss, transaction costs are included in the initial measurement of the instrument.

Transaction costs on financial instruments at fair value through profit or loss are recognised in profit or loss.

Regular purchases and sales of investments are recognised on trade-date, i.e. the date on which the Group commits to purchase or sell the asset.

Subsequent measurement

Financial instruments at fair value through profit or loss are subsequently measured at fair value, with gains and losses arising from changes in fair value being included in profit or loss for the period.

Net gains or losses on the financial instruments at fair value through profit or loss exclude dividends and interest.

Dividend income is recognised in profit or loss as part of other income when the group's right to receive payment is established.

Loans and receivables are subsequently measured at amortised cost, using the effective interest method, less accumulated impairment losses.

Held-to-maturity investments are subsequently measured at amortised cost, using the effective interest method, less accumulated impairment losses.

Available-for-sale financial assets are subsequently measured at fair value. This excludes equity investments for which a fair value is not determinable, which are measured at cost less accumulated impairment losses.

Gains and losses arising from changes in fair value are recognised in other comprehensive income and accumulated in equity until the asset is disposed of or determined to be impaired. Interest on available-for-sale financial assets calculated using the effective interest method is recognised in profit or loss as part of other income. Dividends received on available-for-sale equity instruments are recognised in profit or loss as part of other income when the group's right to receive payment is established.

Changes in fair value of available-for-sale financial assets denominated in a foreign currency are analysed between translation differences resulting from changes in amortised cost and other changes in the carrying amount. Translation differences on monetary items are recognised in profit or loss, while translation differences on non-monetary items are recognised in other comprehensive income and accumulated in equity.

Financial liabilities at amortised cost are subsequently measured at amortised cost, using the effective interest method.

Fair value determination

The fair values of quoted investments are based on current bid prices. If the market for a financial asset is not active (and for unlisted securities), the group establishes fair value by using valuation techniques. These include the use of recent arm's length transactions, reference to other instruments that are substantially the same, discounted cash flow analysis, and option pricing models making maximum use of market inputs and relying as little as possible on entity-specific inputs.

Impairment of financial assets

At each reporting date the group assesses all financial assets, other than those at fair value through profit or loss, to determine whether there is objective evidence that a financial asset or Group of financial assets has been impaired.

Financial assets are considered to be impaired when 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 affected.



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1.9 Financial instruments - IAS39 comparatives (continued)

For amounts due to the group, significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy and default of payments are all considered indicators of impairment.

In the case of equity securities classified as available-for-sale, a significant or prolonged decline in the fair value of the security below its cost is considered an indicator of impairment. For all other financial assets, objective evidence of impairment could include:

- significant financial difficulty of the issuer or counterparty; or
- breach of contract, such as a default or delinquency in interest or principal payments; or
- it becoming probable that the borrower will enter bankruptcy or financial re-organisation; or
- the disappearance of an active market for that financial asset because of financial difficulties.

For financial assets carried at amortised cost, the amount of the impairment loss recognised is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

For financial assets carried at cost, the amount of the impairment loss is measured as the difference between the asset's carrying amount and the present value of the estimated future cash flows discounted at the current market rate of return for a similar financial asset. Such impairment loss may not be reversed in subsequent periods.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade receivables, where the carrying amount is reduced through the use of an allowance account. 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 profit or loss.

When an available-for-sale financial asset is considered to be impaired, cumulative gains or losses previously recognised in other comprehensive income are reclassified to profit or loss in the period.

For financial assets measured at amortised cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed through profit or loss to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortised cost would have been had the impairment not been recognised.

In respect of available-for-sale equity securities, impairment losses previously recognised in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to an impairment loss is recognised in other comprehensive income and accumulated under the heading of investments revaluation reserve. In respect of available-for-sale debt securities, impairment losses are subsequently reversed through profit or loss if an increase in the fair value of the investment can be objectively related to an event occurring after the recognition of the impairment loss.

The group derecognises a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the group recognises its retained interest in the asset and an associated liability for amounts it may have to pay. If the group retains substantially all the risks and rewards of ownership of a transferred financial asset, the group continues to recognise the financial asset and also recognises a collateralised borrowing for the proceeds received.

On derecognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognised in other comprehensive income and accumulated in equity is recognised in profit or loss.

On derecognition of a financial asset other than in its entirety (e.g. when the group retains an option to repurchase part of a transferred asset or retains a residual interest that does not result in the retention of substantially all the risks and rewards of ownership and the group retains control), the group allocates the previous carrying amount of the financial asset between the part it continues to recognise under continuing involvement, and the part it no longer recognises on the basis of the relative fair values of those parts on the date of the transfer. The difference between the carrying amount allocated to the part that is no longer recognised and the sum of the consideration received for the part no longer recognised and any cumulative gain or loss allocated to it that had been recognised in other comprehensive income is recognised in profit or loss. A cumulative gain or loss that had been recognised in other comprehensive income is allocated between the part that continues to be recognised and the part that is no longer recognised on the basis of the relative fair values of those parts.



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1.9 Financial instruments - IAS39 comparatives (continued)

Financial instruments designated as at fair value through profit or loss

These are financial assets held for trading. A financial asset is classified in this category if acquired principally for the purpose of selling in the short term. Assets in this category are classified as current assets if they are either held for trading or are expected to be realised within 12 months of the statement of financial position date.

Gains or losses arising from changes in the fair value of the 'financial assets at fair value through profit or loss' category, are presented in the statement of comprehensive income in the period in which they arise. Dividend income from financial assets at fair value through profit or loss is recognised in the statement of comprehensive income as part of other income when the Group's right to receive payment is established.

Financial instruments designated as available-for-sale

Available-for-sale financial assets are non-derivatives that are either designated in this category or not classified in any of the other categories. They are included in non-current assets unless management intends to dispose of the investment within 12 months of the statement of financial position date.

Changes in the fair value of monetary securities classified as available-for-sale and non-monetary securities classified as available-for-sale are recognised in comprehensive income.

When securities classified as available-for-sale are sold or impaired, the accumulated fair value adjustments recognised in other comprehensive income are included in the statement of comprehensive income as 'gains and losses from investment securities'. Interest on available-for-sale securities calculated using the effective interest method is recognised in the statement of comprehensive income. Dividends on available-for-sale equity instruments are recognised in the statement of comprehensive income when the company's right to receive payments is established.

Loans to (from) group companies

These include loans to and from holding companies, fellow subsidiaries, subsidiaries, joint ventures and associates and are recognised initially at fair value plus direct transaction costs.

Loans to companies are classified as loans and receivables.

Loans from Group companies are classified as financial liabilities measured at amortised cost.

Loans to shareholders, directors, managers and employees

These financial assets are classified as loans and receivables.

Trade and other receivables

Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortised cost using the effective interest rate method. Appropriate allowances for estimated irrecoverable amounts are recognised in profit or loss when there is objective evidence that the asset is impaired. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments (more than 30 days overdue) are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the asset is reduced through the use of an allowance account, and the amount of the loss is recognised in profit or loss within operating expenses. When a trade receivable is uncollectible, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against operating expenses in profit or loss.

Trade and other receivables (excluding prepayments, deposits and VAT receivable) are classified as loans and receivables.

Trade and other payables

Trade payables are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand and demand deposits, and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are initially recognised at fair value and subsequently treated as loans and receivables.

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1.9 Financial instruments - IAS39 comparatives (continued)

Bank overdraft and borrowings

Bank overdrafts and borrowings are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method. Any difference between the proceeds (net of transaction costs) and the settlement or redemption of borrowings is recognised over the term of the borrowings in accordance with the group's accounting policy for borrowing costs.

Derivatives

Derivative financial instruments, which are not designated as hedging instruments, consisting of foreign exchange contracts and interest rate swaps, are initially measured at fair value on the contract date, and are re-measured to fair value at subsequent reporting dates.

Derivatives embedded in other financial instruments or other non-financial host contracts are treated as separate derivatives when their risks and characteristics are not closely related to those of the host contract and the host contract is not carried at fair value with unrealised gains or losses reported in profit or loss.

Changes in the fair value of derivative financial instruments are recognised in profit or loss as they arise. Derivatives are classified as financial assets at fair value through profit or loss - held for trading.

The patents, trademarks and other rights relate to intellectual property internally generated by a subsidiary of the company, which is used in the purification of Fluorine.

Computer software has been specifically developed for Gammatec. Management has assessed that no impairment indicators exist as the subsidiary is generating healthy cash flows.

1.10 Leases

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

Finance leases – lessee

Finance leases are recognised as assets and liabilities in the statement of financial position at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments. The corresponding liability to the lessor is included in the statement of financial position as a finance lease obligation.

The assets are depreciated over the useful life on a straight line basis consistent with the property, plant and equipment within the group. The discount rate used in calculating the present value of the minimum lease payments is the interest rate implicit in the lease.

The lease payments are apportioned between the finance charge and reduction of the outstanding liability. The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate on the remaining balance of the liability.

Operating leases - lessor

Operating lease income is recognised as an income on a straight-line basis over the lease term.

Initial direct costs incurred in negotiating and arranging operating leases are added to the carrying amount of the leased asset and recognised as an expense over the lease term on the same basis as the lease income.

Income for leases is disclosed under revenue in profit or loss.

Operating leases – lessee

Operating lease payments are recognised as an expense on a straight-line basis over the lease term except when another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. The difference between the amounts recognised as an expense and the contractual payments is recognised as an operating lease asset. This liability is not discounted.

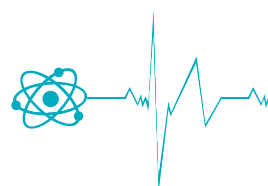
In the event that lease incentives are received to enter into operating leases, such incentives are recognised as a liability. The aggregate benefit of incentives is recognised as a reduction of rental expense on a straight-line basis, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

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

1.11 Inventories

Inventories are measured at the lower of cost and net realisable value.

Net realisable value represents the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.



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1.11 Inventories (continued)

The cost of inventories comprises of all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

The cost of inventories of items that are not ordinarily interchangeable and goods or services produced and segregated for specific projects is assigned using specific identification of the individual costs.

The cost of inventories is assigned using the weighted average cost formula. The same cost formula is used for all inventories having a similar nature and use to the entity.

When inventories are sold, the carrying amount of those inventories are recognised as an expense in the period in which the related revenue is recognised. The amount of any write-down of inventories to net realisable value and all losses of inventories are recognised as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realisable value, are recognised as a reduction in the amount of inventories recognised as an expense in the period in which the reversal occurs.

1.12 Non-current assets held for sale

Non-current assets and disposal groups are classified as held for sale if their carrying amount will be recovered through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the asset (or disposal group) is available for immediate sale in its present condition. Management must be committed to the sale, which should be expected to qualify for recognition as a completed sale within one year from the date of classification.

In the statement of comprehensive income, income and expenses from discontinued operations are reported separately from income and expenses from continuing operations, down to the level of profit after taxes, even when the Group retains a non-controlling interest in the subsidiary after the sale. The resulting profit or loss (after taxes) is reported separately in the statement of comprehensive income as part of comprehensive income.

Non-current assets held for sale (or disposal group) are measured at the lower of its previous carrying amount and fair value less costs to sell.

A non-current asset is not depreciated (or amortised) while it is classified as held for sale, or while it is part of a disposal group classified as held for sale.

Interest and other expenses attributable to the liabilities of a disposal group classified as held for sale are recognised in profit or loss.

Any gain or loss on the remeasurement on a non-current asset classified as held for sale that does not meet the definition of a discontinued operation is included in profit or loss from continuing operations.

Any impairment loss is recognised for any initial or subsequent write-down of the asset to fair value less cost to sell.

A gain shall be recognised for any subsequent increase in fair value less costs to sell of the asset, but not in excess of the cumulative impairment loss that has been recognised previously.

1.13 Impairment of tangible and intangible assets other than goodwill

The group assesses at the end of the reporting period whether there is any indication that an asset may be impaired. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any).

Irrespective of whether there is any indication of impairment, the group also:

- tests intangible assets with an indefinite useful life or intangible assets not yet available for use annually for impairment by comparing its carrying amount with its recoverable amount. This impairment test is performed during the annual period and at the same time every period.
- tests goodwill acquired in a business combination annually for impairment.

If it is not possible to estimate the recoverable amount of the individual asset, the recoverable amount of the cash-generating unit to which the asset belongs is determined.

The recoverable amount of an asset or a cash-generating unit is the higher of its fair value less costs to sell and its value in use.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

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.

An impairment loss of assets carried at cost less any accumulated depreciation or amortisation is recognised immediately in profit or loss. Any impairment loss of a revalued asset is treated as a revaluation decrease.



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1.13 Impairment of tangible and intangible assets other than goodwill (continued)

Goodwill acquired in a business combination is, from the acquisition date, allocated to each of the cash-generating units, or groups of cash-generating units, that are expected to benefit from the synergies of the combination.

An impairment loss is recognised for cash-generating units if the recoverable amount of the units is less than the carrying amount of the units. The impairment loss is allocated to reduce the carrying amount of the assets of the unit in the following order:

- first, to reduce the carrying amount of any goodwill allocated to the cash-generating unit and
- then, to the other assets of the unit, pro rata on the basis of the carrying amount of each asset in the unit.

The carrying amount of an asset included in a cash generating unit may not be reduced below the highest of (1) Its fair value less cost to sell; (2) Its value in use or (3) zero.

An entity assesses at each reporting date whether there is any indication that an impairment loss recognised in prior periods for assets other than goodwill may no longer exist or may have decreased. If any such indication exists, the recoverable amounts of those assets are estimated.

The increased carrying amount of an asset other than goodwill 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 other than goodwill is recognised immediately in profit or loss. Any reversal of an impairment loss of a revalued asset is treated as a revaluation increase.

1.14 Share capital and equity

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Ordinary shares are classified as equity and measured at cost.

1.15 Employee benefits

Short-term employee benefits

The cost of short-term employee benefits, those payable within 12 months after the service is rendered, such as paid vacation leave and sick leave, bonuses, and non-monetary benefits such as medical care, are recognised in the period in which the service is rendered and are 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.

The expected cost of profit sharing and bonus payments is recognised as an expense when there is a legal or constructive obligation to make such payments as a result of past performance.

Defined contribution plans

The companies operate a provident fund on behalf of its employees. The schemes are generally funded through payments to insurance companies or trustee-administered funds, determined by periodic actuarial calculations. A defined contribution plan is a plan under which the company pays fixed contributions into a separate entity. The company has no legal or constructive obligations to pay further contributions if the fund does not hold sufficient assets to pay all employees the benefit relating to employee service in the current and prior periods.

Payments to defined contribution retirement benefit plans are charged as an expense as they fall due. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in the future payments is available.

Defined benefit plans

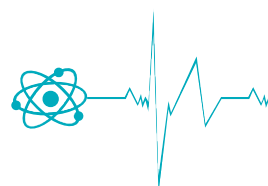
Some Group companies provide post-retirement healthcare benefits to their retirees. The entitlement to these benefits is usually conditional on the employee remaining in service up to retirement age and the completion of a minimum service period. For defined benefit plans the cost of providing the benefits is determined using the projected unit credit method.

Actuarial valuations are conducted on an annual basis by independent actuaries.

Consideration is given to any event that could impact the funds up to the end of the reporting period where the interim valuation is performed at an earlier date.

Past service costs are recognised immediately to the extent that the benefits are already vested, and are otherwise amortised on a straight line basis over the average period until the amended benefits become vested.

Actuarial gains and losses are recognised in the year in which they arise, in other comprehensive income.



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1.15 Employee benefits (continued)

Gains or losses on the curtailment or settlement of a defined benefit plan are recognised when the group is demonstrably committed to curtailment or settlement.

When it is virtually certain that another party will reimburse some or all of the expenditure required to settle a defined benefit obligation, the right to reimbursement is recognised as a separate asset. The asset is measured at fair value. In all other respects, the asset is treated in the same way as plan assets. In profit or loss, the expense relating to a defined benefit plan is presented as the net of the amount recognised for a reimbursement.

The amount recognised in the statement of financial position represents the present value of the defined benefit obligation as adjusted for unrecognised actuarial gains and losses and unrecognised past service costs and reduces by the fair value of plan assets.

Any asset is limited to unrecognised actuarial losses and past service costs, plus the present value of available refunds and reduction in future contributions to the plan.

1.16 Provisions and contingencies

Provisions are recognised when:

- the group 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 recognised as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows (where the effect of the time value of money is material).

Where some or all of the expenditure required to settle a provision is expected to be reimbursed by another party, the reimbursement shall be recognised when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement shall be treated as a separate asset. The amount recognised for the reimbursement shall not exceed the amount of the provision.

Provisions are not recognised for future operating losses.

Onerous contracts

If an entity has a contract that is onerous, the present obligation under the contract shall be recognised and measured as a provision.

An onerous contract is considered to exist where the Group has a contract under which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received from the contract. Rental income relating to Pelchem has resulted in an onerous contract.

Contingent assets and liabilities

After their initial recognition, contingent liabilities recognised in business combinations that are recognised separately are subsequently measured at the higher of:

- the amount that would be recognised as a provision; and
- the amount initially recognised less cumulative amortisation.

Contingent assets and contingent liabilities are not recognised on the face of the Annual Financial Statements however they are disclosed in note 35 - Contingencies.

1.17 Government grants and deferred grant income

Government grants are recognised when there is reasonable assurance that:

- the group will comply with the conditions attaching to them; and
- the grants will be received.

Government grants are recognised as income over the periods necessary to match them with the related costs that they are intended to compensate.



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1.17 Government grants and deferred grant income (continued)

Specifically, government grants whose primary condition is that the Group should purchase, construct or otherwise acquire non-current assets are recognised as deferred revenue in the consolidated statement of financial position and transferred to profit or loss on a systematic and rational basis over the useful lives of the related assets.

A government grant that becomes receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the entity with no future related costs is recognised as income of the period in which it becomes receivable.

Government grants related to assets, including non-monetary grants at fair value, are presented in the statement of financial position by setting up the grant as deferred income.

Grants related to income are presented as a credit in the profit or loss (separately).

Repayment of a grant related to income is applied first against any un-amortised deferred credit set up in respect of the grant. To the extent that the repayment exceeds any such deferred credit, or where no deferred credit exists, the repayment is recognised immediately as an expense.

Repayment of a grant related to an asset is recorded by reducing the deferred income balance by the amount repayable. The cumulative additional depreciation that would have been recognised to date as an expense in the absence of the grant is recognised immediately as an expense.

1.18 Revenue

NECSA derives revenue from the following major sources:

- Sale of Goods to Customers
- Services rendered to customers
- Contract revenue
- Interest
- Dividends

Revenue is measured based on the consideration specified in a contract with a customer and excludes amounts collected on behalf of third parties. The company recognises revenue when it transfers control of a product or service to a customer.

Sale of Goods to customers

The company sells goods directly to customers. Revenue is recognised at a point in time for sales of goods. For sales of goods to customers, revenue is recognised when control of the goods has transferred, being at the point the customer purchases the goods. Payment of the transaction price is due immediately at the point the customer purchases the goods. A receivable is recognised for account holding customers. Delivery occurs when the goods have been shipped to the customer's specific location. When the customer initially purchases the goods the transaction price received by the company is recognised as a contract liability until the goods have been delivered to the customer.

Services Rendered

The group renders services for its customers. Revenue from providing services is recognised in the accounting period in which the services are rendered. For fixed-price contracts, revenue is recognised based on the actual service provided to the end of the reporting period as a proportion of the total services to be provided. Estimates of revenues, costs or extent of progress toward completion are revised if circumstances change. Any resulting increases or decreases in estimated revenues or costs are reflected in profit or loss in the period in which the circumstances that give rise to the revision become known by management. In case of fixed-price contracts, the customer pays the fixed amount based on a payment schedule. If the services rendered by the company exceed the payment, a contract asset is recognised. If the payments exceed the services rendered, a contract liability is recognised.

Contract Revenue

Contract revenue comprises:

- the initial amount of revenue agreed in the contract; and
- variations in contract work, claims and incentive payments:
 - to the extent that it is probable that they will result in revenue; and
 - they are capable of being reliably measured.



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Accounting Policies

1.18 Revenue (continued)

Interest income from a financial asset is recognised when it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably. Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount on initial recognition.

Dividends

Dividends are recognised, in profit or loss, when the shareholder's right to receive payment has been established provided that it is probable that the economic benefits will flow to the entity and that the amount of dividend income can be measured reliably. Service fees included in the price of a product are recognised as revenue over the period during which the service is performed.

1.19 Construction contracts and receivables

When the outcome of a construction contract cannot be estimated reliably, revenue and costs are recognised by reference to the stage of completion of the contract activity at the end of the reporting period, measured based on the proportion of contract costs incurred for work performed to date relative to the estimated total contract costs, except where this would not be representative of the stage of completion. Variations in contract work, claims and incentive payments are included to the extent that the amount can be measured reliably and its receipt is considered probable.

When the outcome of a construction contract cannot be estimated reliably, contract revenue is recognised to the extent of contract costs incurred that it is probable will be recoverable. Contract costs are recognised as expenses in the period in which they are incurred.

When it is probable that total contract costs will exceed total contract revenue, the expected loss is recognised as an expense immediately. When contract costs incurred to date plus recognised profits less recognised losses exceed progress billings, the surplus is shown as amounts due from customers for contract work. For contracts where progress billings exceed contract costs incurred to date plus

recognised profits less recognised losses, the surplus is shown as the amounts due to customers for contract work. Amounts received before the related work is performed are included in the consolidated statement of financial position, as a liability, as advances received. Amounts billed for work performed but not yet paid by the customer are included in the consolidated statement of financial position under trade and other receivables.

Necsa does not enter into construction contracts greater than 12 months.

1.20 Cost of sales

When inventories are sold, the carrying amount of those inventories is recognised as an expense in the period in which the related revenue is recognised. The amount of any write-down of inventories to net realisable value and all losses of inventories are recognised as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realisable value, is recognised as a reduction in the amount of inventories recognised as an expense in the period in which the reversal occurs.

The related cost of providing services recognised as revenue in the current period is included in cost of sales. Contract costs comprise:

- costs that relate directly to the specific contract;
- costs that are attributable to contract activity in general and can be allocated to the contract; and
- such other costs as are specifically chargeable to the customer under the terms of the contract.

1.21 Translation of foreign currencies

Functional and presentation currency

Items included in the financial statements of each of the group entities are measured using the currency of the primary economic environment in which the entity operates.

The consolidated financial statements are presented in Rand which is the group functional and presentation currency.

Foreign currency transactions

In preparing the financial statements of each individual Group entity, transactions in currencies other than the entity's functional currency (foreign currencies) are recognised at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Exchange differences on monetary items are recognised in profit or loss in the period in which they arise except for:



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Accounting Policies

1.21 Translation of foreign currencies (continued)

- exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings;
- exchange differences on transactions entered into in order to hedge certain foreign currency risks; and

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 financial statements are recognised in profit or loss in the period in which they arise.

When a gain or loss on a non-monetary item is recognised to other comprehensive income and accumulated in equity, any exchange component of that gain or loss is recognised to other comprehensive income and accumulated in equity. When a gain or loss on a non-monetary item is recognised in profit or loss, any exchange component of that gain or loss is recognised in profit or loss.

Necsa is exposed to foreign currency translation risks relating to Euro, Malaysian Ringgit and Dirham currencies.

Necsa, NTP and Pelchem enter into FEC's for all procurement transactions over R300 000 and they enter into FEC contracts for exposure to income receivable.

Investments in subsidiaries, joint ventures and associates

For the purposes of presenting consolidated financial statements, the assets and liabilities of the Group's foreign operations are translated into Rands using exchange rates prevailing at the end of each reporting period. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuate significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising, if any, are recognised in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

On the disposal of a foreign operation (i.e. a disposal of the Group's entire interest in a foreign operation, or a disposal involving loss of control over a subsidiary that includes a foreign operation, a disposal involving loss of joint control over a jointly controlled entity that includes a foreign operation, or a disposal involving loss of significant influence over an associate that includes a foreign operation), all of the exchange differences accumulated in equity in respect of that operation attributable to the owners of the Company are reclassified to profit or loss.

In the case of a partial disposal that does not result in the Group losing control over a subsidiary that includes a foreign operation, the proportionate share of accumulated exchange differences are re-attributed to non-controlling interests and are not recognised in profit or loss. For all other partial disposals (i.e. reductions in the Group's ownership interest in associates or jointly controlled entities that do not result in the Group losing significant influence or joint control), the proportionate share of the accumulated exchange differences is reclassified to profit or loss.

Goodwill and fair value adjustments on identifiable assets and liabilities acquired arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the rate of exchange prevailing at the end of each reporting period. Exchange differences arising are recognised in equity.

1.22 Related Parties

The Group operates in an economic environment currently dominated by entities directly or indirectly owned by the South African Government. As a result of the constitutional independence of all three spheres of government in South Africa, only parties within the national sphere of government are considered to be related parties.

Key management is defined as being individuals with the authority and responsibility for planning, directing and controlling the activities of the entity. All individuals from the level of Chief Executive Officer up to the Board of Directors are regarded as key management.

Close family members of key management personnel are considered to be those family members who may be expected to influence or be influenced by key management individuals or other parties related to the entity.

1.23 Fruitless and wasteful, irregular and unauthorised expenditure

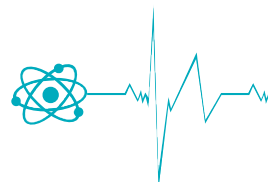
Fruitless and wasteful expenditure in terms of the Public Finance Management Act means expenditure which was made in vain and would have been avoided had reasonable care been exercised are recorded in the notes to the financial statements.

Irregular expenditure is recorded in the notes to the financial statements. The amount recorded in the notes are equal to the value of the irregular expenditure incurred unless it is impracticable to determine the value thereof.

Unauthorised expenditure, when confirmed, must be recorded in the Statement of Financial Position. The amount recorded must be equal to the overspending within the division or the expenditure incurred that was not in accordance with the purpose of the division.

1.24 Rounding

Unless otherwise stated all financial figures are rounded off to the nearest one thousand Rands (R'000).



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Notes to the Financial Statements

2. SIGNIFICANT JUDGEMENTS AND SOURCES OF ESTIMATION UNCERTAINTY

Significant judgement and estimates in assessing the impairment of Financial assets

Financial assets, other than those at FVPL, are assessed for indicators of impairment at the end of each reporting period. The Group uses significant judgement in determining whether financial assets are considered to be impaired when 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 affected.

For Annual Financial Statements equity investments, a significant or prolonged decline in the fair value of the security below its cost is considered to be objective evidence of impairment. This determination requires significant judgement by Group.

For certain categories of financial assets, such as trade receivables, assets are assessed for impairment on a collective basis even if they were assessed not to be impaired individually. Objective evidence of impairment for a portfolio of receivables could include the Group's past experience of collecting payments, an increase in the number of delayed payments in the portfolio past the average credit period of 60 days, as well as observable changes in national or local economic conditions that correlate with default on receivables.

Allowance for slow moving, damaged and obsolete inventory

An allowance is made to write inventory down to the lower of cost or net realisable value.

Management have made estimates of the selling price and direct cost to sell on certain inventory items. The write down is included in the operating profit note 27.

Fair value estimation

Some of the Group assets and liabilities are measured at fair value for financial reporting purposes. The Chief Financial Officer's determines appropriate valuation techniques based on the accounting standards.

The fair value of financial instruments traded in active markets (such as trading and available-for-sale securities) is based on quoted market prices at the end of the reporting period. The quoted market price used for financial assets held by the group is the current bid price.

The fair value of financial instruments that are not traded in an active market is determined by using valuation techniques. The group uses a variety of methods and makes assumptions that are based on market conditions existing at the end of each reporting period. Other techniques, such as estimated discounted cash flows, are used to determine fair value for the remaining financial instruments. The fair value of forward foreign exchange contracts is determined using quoted forward exchange rates at the end of the reporting period. In estimating the fair value of an asset or liability, the Group uses market observable data to the extent that it is available. Where level 1 inputs are not available, the Group engages valuers to establish the appropriate valuation techniques and inputs into the model.

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the group for similar financial instruments. The assumption is based on the management expectation that outstanding balances will be collected or paid within twelve months, therefore the time value of money will not have an impact as it is considered to be immaterial.

Information about valuation techniques, inputs used in determining fair values of various assets and liabilities are disclosed in notes.

Impairment testing of Goodwill and tangible assets

The recoverable amounts of cash-generating units and individual assets have been determined based on the higher of value-in-use calculations and fair values less costs to sell. These calculations require the use of estimates and assumptions. It is reasonably possible that an assumption may change which may then impact estimations and may then require a material adjustment to the carrying value of goodwill and tangible assets.

The group reviews and tests the carrying value of assets when events or changes in circumstances suggest that the carrying amount may not be recoverable. In addition, goodwill is tested on an annual basis for impairment. Assets are grouped at the lowest level for which identifiable cash flows are largely independent of cash flows of other assets and liabilities. If there are indications that impairment may have occurred, estimates are prepared of expected future cash flows for each group of assets. Expected future cash flows used to determine the value in use of goodwill and tangible assets are inherently uncertain and could materially change over time.

Provisions

Provisions are estimated by management based on the available information. Additional disclosure of these estimates are included in note 20 - Provisions.



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2. SIGNIFICANT JUDGEMENTS AND SOURCES OF ESTIMATION UNCERTAINTY (CONTINUED)

Taxation

Necsa is not a tax paying entity however subsidiaries are income tax paying entities.

Judgement is required in determining the provision for income taxes due to the complexity of legislation. There are many transactions and calculations for which the ultimate tax determination is uncertain during the ordinary course of business. The group recognises liabilities for anticipated tax audit issues based on estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact the income tax and deferred tax provisions in the period in which such determination is made.

The group recognises the net future tax benefit related to deferred income tax assets to the extent that it is probable that the deductible temporary differences will reverse in the foreseeable future. Assessing the recoverability of deferred income tax assets requires the group to make significant estimates related to expectations of future taxable income. Estimates of future taxable income are based on forecast cash flows from operations and the application of existing tax laws in each jurisdiction. To the extent that future cash flows and taxable income differ significantly from estimates, the ability of the group to realise the net deferred tax assets recorded at the end of the reporting period could be impacted.

Useful lives and residual values of property, plant and equipment

The useful lives of assets are based on management's estimation. Management considers the following factors to determine the optimum useful life expectation for each of the individual items of property, plant and equipment.

- Expected usage of the asset. Usage is assessed by reference to the assets expected capacity or physical output.
- Expected physical wear and tear, which depends on operational factors such as the number of shifts for which the asset is to be used and the repair and maintenance programme, and the care and maintenance of the asset while idle.
- Technical or commercial obsolescence arising from changes or improvement in production or from a change in the market demand for the product or service output of the asset.
- Exit policy of the Company.

The estimation of residual value of assets is also based on management's judgement that the assets will be sold and what its condition will be like at the end of its useful life. For assets that incorporate both a tangible and intangible portion, management uses judgement to assess which element is more significant to determine whether it should be treated as property, plant and equipment or intangible assets.

Post retirement benefit obligation

Judgement is required when recognizing and measuring the retirement benefit obligation of the Group and the Company. The obligation is valued by an independent actuary at each reporting date. The actuarial valuation method is used to value the obligation and the projected unit credit method is used. Future benefit values are projected using specific actuarial assumptions and the liability to in-service members is accrued over the expected working lifetime. The most significant of which are subsidy inflation, longevity, cash flow risk, changes in bond yields and CPI as well as further changes in legislation.

3. NEW STANDARDS AND INTERPRETATIONS

3.1 Standards and interpretations effective and adopted in the current year

In the current year, the group has adopted the following standards and interpretations that are effective for the current financial year and that are relevant to its operations:

Standard/ Interpretation:	Effective date: Years beginning on or after	Expected impact:
• IFRIC 22: Foreign currency transactions and advance considerations	01 January 2018	(5)
• IFRS 9 Financial Instruments	01 January 2018	(3)
• IFRS 15 Revenue from Contracts with Customers	01 January 2018	(4)
• Amendments to IFRS 15: Clarifications to IFRS 15 Revenue from Contracts with Customers	01 January 2018	The impact of the standard is not material.



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3. NEW STANDARDS AND INTERPRETATIONS (CONTINUED)

3.2 Standards and interpretations not yet effective

The following standards and interpretations have been published and are mandatory for the group's accounting periods beginning on or after 01 April 2019 or later periods but are not relevant to its operations:

Standard/ Interpretation:	Effective date: Years beginning on or after	Expected impact:
• IFRIC 23 Uncertainty over Income Tax Treatments	01 January 2019	(1)
• IFRS 16 Leases	01 January 2019	(2)
• Annual Improvements to IFRS Standards 2015-2017 Cycle - various standards	01 January 2019	Impact is currently being assessed
• Amendments to refer to Conceptual Framework in IFRS Standards	01 January 2020	Impact is currently being assessed
• Amendment to IFRS 9: Prepayment features with negative compensation	01 January 2019	Impact is currently being assessed
• Amendments to IAS 19: Plan amendments, curtailment of settlement	01 January 2019	Impact is currently being assessed

(1) IFRIC 23 Uncertainty over Income Tax Treatments

IFRIC 23 clarifies the accounting for income tax treatments that have yet to be accepted by tax authorities. Specifically, IFRIC 23 provides clarity on how to incorporate this uncertainty into the measurement of tax as reported in the financial statements.

IFRIC 23 does not introduce any new disclosures but reinforces the need to comply with existing disclosure requirements about:

- judgments made;
- assumptions and other estimates used; and
- the potential impact of uncertainties that are not reflected.

The Group's current tax practice is to comply with all tax legislation and regulations.

Management has performed a high level assessment of the impact of the standard on its financial statements. The impact of the standard is not material.

IFRIC 23 applies for annual periods beginning on or after 1 January 2019. Earlier adoption is permitted.

(2) IFRS 16 Leases

IFRS 16 was published in January 2016. It sets out the principles for recognition, measurement, presentation and disclosure of leases for both parties to a contract, i.e. the customer ('lessee') and the supplier ('lessor'). IFRS 16 replaces the previous leases Standard, IAS 17

Leases, and related Interpretations. IFRS 16 includes a single model for lessees which will result in almost all leases being included in the Statement of Financial Position. No significant changes have been included for lessors. IFRS 16 also includes extensive new disclosure requirements for both lessees and lessors.

The financial statement disclosure will be updated to ensure compliance with IFRS 16 requirements, including the implications of adoption of the various transaction options.

Management has performed an assessment of the impact of the standard on its financial statements. The impact of this standard is not material.

The standard is effective for annual periods beginning on or after 1 January 2019, with early adoption permitted only if the entity also adopts IFRS 15.

(3) IFRS 9 Financial Instruments

On 24 July 2014, the IASB issued the final IFRS 9 Financial Instruments Standard, which replaces earlier versions of IFRS 9 and completes the IASB's project to replace IAS 39 Financial Instruments: Recognition and Measurement.

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3. NEW STANDARDS AND INTERPRETATIONS (CONTINUED)

This standard will include changes in the measurement bases of the entity's financial assets to amortised cost, fair value through other comprehensive income or fair value through profit or loss. Even though these measurement categories are similar to IAS 39, the criteria for classification into these categories are significantly different. In addition, the IFRS 9 impairment model has been changed from an "incurred loss" model from IAS 39 to an "expected credit loss" model.

Based on the initial assessment the entity does not believe that new classification requirements will have a material impact on its classification of financial assets. The new impairment model will apply to financial assets at amortised cost.

Management has performed a high level assessment of the impact of the standard on its financial statements. Management continues with detailed assessment to determine the extent of these potential changes.

The financial statement disclosures will be updated to ensure compliance with IFRS 9 and IFRS 7 requirements including the implications of adoption of the various transition options.

The standard is effective for annual periods beginning on or after 1 January 2018 with retrospective application, early adoption is permitted.

(4) IFRS 15 Revenue from Contracts with Customers

This standard replaces IAS 11 Construction Contracts, IAS 18 Revenue, IFRIC 13 Customer Loyalty Programmes, IFRIC 15 Agreements for the Construction of Real Estate, IFRIC 18 Transfer of Assets from Customers and SIC-31 Revenue – Barter of Transactions Involving Advertising Services.

The standard contains a single model that applies to contracts with customers and two approaches to recognising revenue: at a point in time or over time. The model features a contract-based five-step analysis of transactions to determine whether, how much and when revenue is recognised.

Management has performed a high level assessment of the impact of the standard on its financial statements. Management continues with a detailed assessment to determine the extent of these potential changes.

Possible areas identified from high level assessment:

- Goods sold inclusive of a delivery service will include a formal assessment of the application of a single performance obligation model. To facilitate continuous accounting application. An assessment indicating multiple performance obligations, will impact accounting practice as well as the required disclosure.
- Exported goods will require a formal assessment of the point of transfer of control to be performed in order to determine the appropriate timing for revenue recognition and initial measurement amount. An assessment indicating the different timing in control transfer from current practice will impact accounting practice as well as required disclosure.

The financial statement disclosures will be updated to ensure compliance with IFRS15 requirements including the implications of adoption of the various transition options.

The standard is effective for annual periods beginning on or after 1 January 2018, with early adoption permitted.

(5) IFRIC 22 Foreign Currency Transactions and Advance Consideration

When foreign currency consideration is paid or received in advance of the item it relates to – which may be an asset, an expense or income– IAS 21 The Effects of Changes in Foreign Exchange Rates is not clear on how to determine the transaction date for translating the related item.

This has resulted in diversity in practice regarding the exchange rate used to translate the related item. IFRIC 22 clarifies that the transaction date is the date on which the company initially recognises the prepayment or deferred income arising from the advance consideration. For transactions involving multiple payments or receipts, each payment or receipt gives rise to a separate transaction date.

The financial statement disclosure will be updated to ensure compliance with IFRIC 22 requirements, including the implications of adoption of the various transaction options.



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3. NEW STANDARDS AND INTERPRETATIONS (CONTINUED)

Management has performed a high level assessment of the impact of the standard on its financial statements. Management continues with detailed assessment to determine the extent of these potential changes.

The interpretation applies for annual reporting periods beginning on or after 1 January 2018.

Amendments to IFRS 10 and IAS 28 Sale or Contribution of Assets between an Investor and its Associate or Joint venture

The amendments to IFRS 10 and IAS 28 deal with situations where there is a sale or contribution of assets between an investor and its associate or joint venture. Specifically, the amendments state that gains or losses resulting from the loss of control of a subsidiary that does not contain a business in a transaction with an associate or a joint venture that is accounted for using the equity method, are recognised in the parent's profit or loss only to the extent of the unrelated investors' interest in that associate or joint venture. Similarly, gains and losses resulting from the remeasurement of investments retained in any former subsidiary (that has become an associate or a joint venture that is accounted for using the equity method) to fair value are recognised in the former parent's profit or loss only to the extent of the unrelated investors' interests in the new associate or joint venture.

Amendments to IAS 40 Transfers of Investment Property

The amendments clarify that a transfer to, or from, investment property necessitates an assessment of whether a property meets, or has ceased to meet, the definition of investment property, supported by observable evidence that a change in use has occurred. The amendments further clarify that situations other than the ones listed in IAS 40 may evidence a change in use, and that a change in use is possible for properties under construction (i.e. a change in use is not limited to completed properties).

Annual Improvements to IFRS's 2014-2016 Cycle

The annual improvements include amendments to IFRS 1 and IAS 28, which are not yet mandatory effective for the Group. The package also include amendments to IFRS 12, which is mandatory effective for the Group in the current year.

The amendments to IAS 28 clarify that the option for a venture capital organisation and other similar entities to measure investments in associates and joint ventures at Fair Value through Profit and Loss is available separately for each associate or joint venture, and that election should be made at initial recognition of the associate or joint venture. In respect of the option for an entity that is not an Investment Entity (IE) to retain the fair value measurement applied by its associate or joint venture that are IEs when applying the equity method, the amendments make a similar clarification that this choice is available for each IE associate or IE joint venture. The amendments apply retrospectively with earlier application permitted.

IFRIC 22 Foreign Currency Transactions and Advance Consideration

IFRIC 22 addresses how to determine the "date of transaction" for the purposes of determining the exchange rate to use on initial recognition of an asset, expense or income, when consideration for that item has been paid or received in advance in a foreign currency which resulted in the recognition of a non-monetary asset or non-monetary liability (e.g. a non-refundable deposit or deferred revenue).

The interpretation specifies that the date of transaction is the date on which the entity initially recognises the non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration. If there are multiple payments or receipts in advance, the interpretation requires an entity to determine the date of transaction for each payment or receipt of advance consideration.

The interpretation is effective for annual periods beginning on or after 1 January 2018 with earlier application permitted. Entities can apply the Interpretation either retrospectively or prospectively. Specific transition provisions apply to prospective application.



Notes to the Financial Statements

4. INVESTMENT PROPERTY

Group	2019				2018				2017			
	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000
Investment property	42,990	-	42,990	46,007	-	46,007	18,027	-	18,027	-	-	18,027

Company	2019				2018				2017			
	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000
Investment property	214,433	-	214,433	126,328	-	126,328	63,212	-	63,212	-	-	63,212

Reconciliation of investment property - Group - Year ended 31 March 2019

Investment property	Opening balance R '000	Fair value adjustments R '000	Total R '000
	46,007	(3,018)	42,989

Reconciliation of investment property - Group - Year ended 31 March 2018

Investment property	Opening balance R '000	Transfers from Property, plant and equipment R '000	Fair value adjustments R '000	Total R '000
	18,027	27,989	(9)	46,007



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4. INVESTMENT PROPERTY (CONTINUED)

Reconciliation of investment property - Group - Year ended 31 March 2017

	Opening balance	Transfers from Property, plant and equipment	Other changes, movements	Fair value adjustments	Total
	R '000	R '000	R '000	R '000	R '000
Investment property	17,190	(1,297)	(784)	2,918	18,027

Reconciliation of investment property - Company -Year ended 31 March 2019

	Opening balance	Transfers from Property, plant and equipment	Fair value adjustments	Total
	R '000	R '000	R '000	R '000
Investment property	126,328	78,775	9,330	214,433

Reconciliation of investment property - Company -Year ended 31 March 2018

	Opening balance	Transfers from Property, plant and equipment	Fair value adjustments	Total
	R '000	R '000	R '000	R '000
Investment property	63,212	61,756	1,360	126,328

Reconciliation of investment property - Company -Year ended 31 March 2017

	Opening balance	Transfers from Property, plant and equipment	Other changes, movements	Fair value adjustments	Total
	R '000	R '000	R '000	R '000	R '000
Investment property	61,377	(1,297)	(2,751)	5,883	63,212

	Group			Company		
	2019	2018	2017	2019	2018	2017
	R '000	R '000	R '000	R '000	R '000	R '000
Fair value of investment properties	42,990	46,007	18,027	214,433	126,328	63,212

A register containing the information required by Regulation 25(3) of the Companies Regulations, 2011 is available for inspection at the registered office of the company.

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Notes to the Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Details of valuation

The fair value of the Group's investment property as at 31 March 2019 and 31 March 2018 has been arrived at on the basis of a valuation carried out on the respective dates by Mr M Fitchet from Knight Frank. Mr M Fitchet is a registered Professional Valuer in terms of section

19 of the Property Valuers Act, 2000. The valuers meet the requirements of RICS valuation - Professional standards VS 1.6, having sufficient current knowledge of the particular market and the skills to undertake the valuation completely.

Knight Frank is not a related party to the group and is independent.

The Investment (or Income) Approach to Valuation has been applied in terms of IFRS13. The valuation is made on the basis that the property's Highest and Best Use would be for a mixed use industrial park providing facilities management for security, fire & safety as well as existing steam and compressed air services to tenants, including Necsa.

Gross rentals range from R12/m² for yard area to between R15-R40/m² for workshop/warehouse and R35-R55/m² for offices.

A special assumptions is that the properties are not a National Key Point and is therefore capable of occupation and lease to 3rd parties. The Fair value was determined based on market research by way of enquiries with property practitioners active in the industrial property sector throughout Gauteng and elsewhere in South Africa. Other sources include windeed searches, web based research and the review of SAPOA and Rode property reports.

The valuers adopted the Income or Investment Approach to value for purposes of establishing fair value. The approach relies on value inputs including the application of market related rentals; the assessment of property expenses; consideration for future vacancies and the application of a market related capitalisation rate. There is also value in the surplus farm land value in existing use. In this regard, the valuers have been advised that development restriction exists which disallows housing township development to take place within a 5km radius of NECSA. The full farm falls within this radius. The capitalisation rate adopted is made by reference to the yield rates observed by the valuers for similar properties in the locality and adjusted based on the valuers' knowledge of factors specific to the respective properties.

There has been no change to the valuation technique during the year.

The group's investment property falls into level 2 of the fair value hierarchy. There were no transfers between levels 1 and 2 during the year.

The fair value measurements are recurring as they are performed at the end of each reporting period.



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Figures in Rand thousand

5. PROPERTY, PLANT AND EQUIPMENT

Group	2019			2018			2017		
	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000
Component spares	27,410	(22,322)	5,088	27,839	(20,104)	7,735	24,286	(18,480)	5,806
Finance lease assets	25,764	(20,094)	5,670	24,049	(18,191)	5,858	29,751	(23,444)	6,307
Furniture and fixtures	16,457	(14,303)	2,154	21,076	(15,823)	5,253	19,151	(13,120)	6,031
IT equipment	104,617	(83,298)	21,319	91,243	(73,259)	17,984	88,534	(66,740)	21,794
Land and buildings	855,517	(28,102)	827,415	790,182	(34,052)	756,130	840,874	(87,130)	753,744
Leasehold improvements	195	(192)	3	195	(185)	10	195	(93)	102
Machinery and equipment	363,518	(247,622)	115,896	417,653	(270,080)	147,573	399,059	(244,177)	154,882
Motor vehicles and transport containers	43,584	(33,183)	10,401	59,396	(45,016)	14,380	59,036	(34,987)	24,049
Office equipment	12,628	(11,514)	1,114	13,231	(11,325)	1,906	17,214	(14,272)	2,942
Plant	619,594	(270,320)	349,274	514,682	(187,577)	327,105	546,108	(199,662)	346,446
Research facilities	33,891	(8,053)	25,838	33,217	(7,312)	25,905	32,713	(6,529)	26,184
Total	2,103,175	(739,003)	1,364,172	1,992,763	(682,924)	1,309,839	2,056,921	(708,634)	1,348,287

Company	2019			2018			2017		
	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000	Cost / Valuation R '000	Accumulated depreciation R '000	Carrying value R '000
Finance lease assets	25,670	(20,001)	5,669	24,049	(18,167)	5,882	30,081	(23,420)	6,661
Furniture and fixtures	14,452	(12,852)	1,600	14,309	(12,502)	1,807	14,066	(9,704)	4,362
IT equipment	74,043	(60,901)	13,142	67,535	(57,194)	10,341	65,180	(52,760)	12,420
Land and buildings	644,735	(27,503)	617,232	684,885	(33,831)	651,054	760,790	(81,619)	679,171
Machinery and equipment	341,340	(229,571)	111,769	327,565	(210,803)	116,762	312,933	(191,627)	121,306
Motor vehicles and transport containers	25,200	(19,963)	5,237	24,759	(18,466)	6,293	24,133	(17,230)	6,903
Office equipment	12,277	(11,188)	1,089	11,085	(9,582)	1,503	10,260	(8,076)	2,184
Plant	123,794	(37,708)	86,086	120,957	(35,599)	85,358	201,177	(33,307)	167,870
Research facilities	33,891	(8,053)	25,838	33,217	(7,312)	25,905	32,713	(6,529)	26,184
Total	1,295,402	(427,740)	867,662	1,308,361	(403,456)	904,905	1,451,333	(424,272)	1,027,061

Notes to the Financial Statements

Figures in Rand thousand

5. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Reconciliation of property, plant and equipment - Group - 2019

	Opening balance	Additions	Disposals	Transfers from Investment Property	Revaluations	Other changes, movements	Depreciation	Impairment loss recognised in profit or loss	Impairment reversal recognised in profit or loss	Total
	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Component spares	7,735	-	-	-	-	(2,554)	(93)	-	-	5,088
Finance lease assets (1)	5,857	2	-	-	-	1,645	(1,834)	-	-	5,670
Furniture and fixtures	5,253	96	-	-	-	(2,678)	(512)	(5)	-	2,154
IT equipment	17,984	778	(100)	-	-	29,709	(26,938)	(114)	-	21,319
Land and buildings	756,130	3,653	-	(79)	366	70,133	(2,788)	-	-	827,415
Leasehold improvements	10	-	-	-	-	374	(379)	(2)	-	3
Machinery and equipment	147,573	14	(3)	-	-	(18,957)	(11,687)	(1,044)	-	115,886
Motor vehicles and transport containers	14,380	781	(285)	-	-	(2,127)	(2,151)	(279)	82	10,401
Office equipment	1,906	2,007	-	-	-	(1,139)	(1,657)	(3)	-	1,114
Plant	327,105	14,595	(65)	-	-	19,408	(5,920)	(5,849)	-	349,274
Research facilities	25,905	1	-	-	-	673	(741)	-	-	25,838
Capital - Work in progress	-	-	-	-	-	34,283	(30,737)	(3,546)	-	-
	1,309,838	21,927	(453)	(79)	366	128,770	(85,437)	(10,842)	82	1,364,172



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Figures in Rand thousand

5. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Reconciliation of property, plant and equipment - Group - 2018

	Opening balance	Additions	Disposals	Transfers to Investment Property	Revaluations	Foreign exchange movements	Other changes, movements	Depreciation	Impairment reversal/ (loss) recognised in profit or loss	Impairment reversal recognised in profit or loss	Total
	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Component spares	5,806	331	(16)	-	-	-	2,803	(1,657)	-	-	7,735
Finance lease assets (1)	6,637	2,570	(677)	-	-	-	24	(2,673)	-	-	5,857
Furniture and fixtures	6,032	4,714	(111)	-	-	-	1,452	(6,688)	(12)	(97)	5,253
IT equipment	21,791	3,512	(65)	-	-	-	(1,175)	(5,573)	(36)	-	17,984
Land and buildings	753,744	258	-	(30,377)	37,734	-	28,607	(33,836)	-	-	756,130
Leasehold improvements	102	3,647	-	-	-	-	(3,524)	(220)	-	-	10
Machinery and equipment	154,882	15,077	(27)	-	-	-	(2,588)	(19,643)	(26)	-	147,573
Motor vehicles and transport containers	24,049	1,299	(240)	-	-	(30)	(5,520)	(3,866)	(32)	(164)	14,380
Office equipment	2,613	870	-	-	-	-	313	(1,561)	-	-	1,906
Plant	346,446	26,577	(578)	-	-	(6)	84,961	(22,320)	(81,205)	16	327,105
Research facilities	26,185	504	-	-	-	-	-	(784)	-	-	25,905
Capital - Work in progress	-	-	-	-	-	-	(43,945)	(6,233)	50,178	-	-
	1,348,287	59,359	(1,714)	(30,377)	37,734	(36)	61,408	(105,054)	(31,133)	(245)	1,309,838

Notes to the Financial Statements

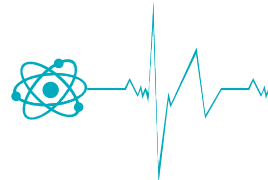
5. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Reconciliation of property, plant and equipment - Group - 2017

	Opening balance	Additions	Disposals	Transfers investment property	Revaluations	Foreign exchange movements	Other changes, movements	Depreciation	Impairment loss recognised in profit or loss	Total
	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Component spares	7,779	1,979	-	-	-	-	(3,263)	(689)	-	5,806
Finance lease assets (1)	5,944	2,733	-	-	-	-	(330)	(2,040)	-	6,307
Furniture and fixtures	8,156	7,182	(53)	-	-	(25)	(4,869)	(4,343)	(17)	6,031
IT equipment	19,059	3,481	(96)	-	-	(6)	4,727	(5,371)	-	21,794
Land and buildings	733,656	15,976	-	1,297	31,098	-	714	(28,997)	-	753,744
Leasehold improvements	117	-	-	-	-	-	(15)	-	-	102
Machinery and equipment	160,228	19,303	(11)	-	-	-	(3,848)	(20,790)	-	154,882
Motor vehicles and transport containers	25,534	2,838	(523)	-	-	(15)	(26)	(3,782)	23	24,049
Office equipment	3,217	283	(1)	-	-	-	473	(1,030)	-	2,942
Plant	315,069	44,023	(357)	-	-	(35)	2,860	(13,778)	(1,336)	346,446
Research facilities	19,992	6,932	-	-	-	-	1	(740)	-	26,185
	1,298,751	104,730	(1,041)	1,297	31,098	(81)	(3,576)	(81,560)	(1,330)	1,348,288

Reconciliation of property, plant and equipment - Company - 2019

	Opening balance	Additions	Disposals	Transfers	Revaluations	Other changes, movements	Depreciation	Total
	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Finance lease assets (1)	5,882	1,621	-	-	-	-	(1,834)	5,669
Furniture and fixtures	1,807	147	-	-	-	-	(354)	1,600
IT equipment	10,341	7,069	(16)	-	-	-	(4,252)	13,142
Land and buildings	651,054	6,283	-	(78,775)	66,173	-	(27,503)	617,232
Machinery and equipment	116,762	13,869	(22)	-	-	-	(18,840)	111,769
Motor vehicles and transport containers	6,293	363	-	-	-	-	(1,419)	5,237
Office equipment	1,503	1,230	-	-	-	-	(1,644)	1,089
Plant	85,358	2,837	-	-	-	-	(2,109)	86,086
Research facilities	25,905	675	-	-	-	-	(742)	25,838
	904,905	34,094	(38)	(78,775)	66,173	-	(58,697)	867,662



Notes to the Financial Statements

5. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Reconciliation of property, plant and equipment - Company - 2018

	Opening balance	Additions	Disposals	Transfers to investment property	Revaluations	Depreciation	Impairment loss recognised in profit or loss	Total
R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Finance lease assets (1)	6,661	2,570	(677)	-	-	(2,672)	-	5,882
Furniture and fixtures	4,362	254	-	-	-	(2,809)	-	1,807
IT equipment	12,420	2,931	(22)	-	-	(4,988)	-	10,341
Land and buildings	679,170	258	-	(30,377)	35,834	(33,831)	-	651,054
Machinery and equipment	121,306	15,077	(27)	-	-	(19,594)	-	116,762
Motor vehicles and transport containers	6,903	1,069	-	-	-	(1,679)	-	6,293
Office equipment	2,184	859	-	-	-	(1,540)	-	1,503
Plant	167,869	2,582	-	-	-	(2,292)	(82,801)	85,358
Research facilities	26,185	504	-	-	-	(784)	-	25,905
	1,027,060	26,104	(726)	(30,377)	35,834	(70,189)	(82,801)	904,905

Reconciliation of property, plant and equipment - Company - 2017

	Opening balance	Additions	Disposals	Transfer from investment property	Revaluations	Other changes, movements	Depreciation	Total
R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Finance lease assets (1)	5,968	2,733	-	-	-	-	(2,040)	6,661
Furniture and fixtures	6,160	70	(1)	-	-	(1)	(1,866)	4,362
IT equipment	14,630	2,802	(71)	-	-	-	(4,941)	12,420
Land and buildings	661,005	15,976	-	1,297	27,020	2,749	(28,877)	679,170
Machinery and equipment	122,675	19,293	(11)	-	-	(1)	(20,650)	121,306
Motor vehicles and transport containers	8,614	72	-	-	-	-	(1,783)	6,903
Office equipment	2,914	181	(1)	-	-	-	(910)	2,184
Plant	162,043	8,116	-	-	-	-	(2,290)	167,869
Research facilities	19,992	6,932	-	-	-	1	(740)	26,185
	1,004,001	56,175	(84)	1,297	27,020	2,748	(64,097)	1,027,060

(1) Finance leases relate to electronic office equipment and motor vehicles.

Notes to the Financial Statements

5. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Expenses incurred in the construction of property, plant and equipment items have not been capitalised to the assets.

All classes of property, plant and equipment items other than land and buildings have been recognised on the cost model.

Pledged as security

No assets have been pledged as security and are secured by the lessor's title to the leased assets.

Details of properties

Land and buildings consist of the following properties:

Necsa: Farm 567, Weldaba; Erf 1150, 1153, 1155 and 1156. The properties were revalued as at 31 March 2019 by an independent valuator. Please refer revaluation below.

Albertinia; Erf 4473 and 4474 Riverdale; Erf 1115, 1224, 1916, 1917, 1919, 1921, 1922, 1924, 1926, 1928 and 1929. These assets are measured at cost less accumulated depreciation.

Springbok; Farm 369 and 380 Vaalputs. The rest of the assets are measured at cost less accumulated depreciation.

Gammatec NDT: Portion 91 of Farm 601 Klipplaatdrif, Vereeniging. The property is encumbered as disclosed in note of Gammatec NDT Annual Financial Statements. The property was revalued as at 25 March 2019 by an independent valuer.

AEC Amersham: Erf 176, 100 Indianapolis Street, Kyalami. The property was revalued as at 31 March 2019 by an independent valuer.

The estimation of the useful lives of property, plant and equipment is based on historic performance as well as expectations about future use and therefore requires a significant degree of judgement to be applied by management. These depreciation rates represent management's current best estimate of the useful lives of the assets.

Transfer of property, plant and equipment not only relates to investment property, but also include transfers to other asset classes. The revaluation reserve may not be distributed to shareholders.

A register containing the information required by Regulation 25(3) of the Companies Regulations, 2011 is available for inspection at the registered office of the Company.



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6. INVESTMENTS IN SUBSIDIARIES

The carrying amounts of subsidiaries are shown net of impairment losses.

The directors' value of the investment in subsidiaries is equal to its carrying value

Name of company	Company			Carrying amount 2019	Carrying amount 2018 * Restated	Carrying amount 2017
	% holding 2019	% holding 2018	% holding 2017			
Pelchem SOC Limited	100 %	100 %	100 %	-	-	42,001
NTP Radioisotopes SOC Limited	100 %	100 %	100 %	220,700	220,700	220,700
Cyclofil SOC Limited	100 %	100 %	100 %	-	-	-
Areca SOC Limited	51 %	51 %	51 %	1	1	1
				220,701	220,701	262,702

* Restated, for further details refer to note 38

The Pelchem Board as well as the Necsa Board approved the conversion of R 115 million to equity, being the trade debt owed to Necsa by Pelchem as at 31 December 2017. The R115 million has been written down to R23 million, as per the impairment indicators conducted by Pelchem.

Pelchem SOC Ltd was a division of Necsa up until 31 March 2007. On 01 April 2007, Pelchem was corporatized as 100% owned subsidiary of Necsa. At that stage Pelchem investment was determined to be R115 million.

Pelchem financial distress have been increasing in an exponential manner, to that extent, during 2014/15 the investment in Pelchem was impaired to zero. However, during 2015/16 Pelchem requested an independent valuator to value its Property Plant and Equipment. Subsequent, to the valuation exercise, management reassessed for indicators for impairment. Based on the outcome of the valuation report, R42 million was re-recognized as a carrying value in the Necsa's Balance Sheet. The R42 million investment in Pelchem is reflected in the 2016/17 Necsa's audited AFS.

During the 2017/18 audit, Pelchem Trade Debt that was standing at R115 million as at 31 December 2017 was converted to equity. However due to the adverse future free cash flows of Pelchem, the entire new investment of R115 million was immediately impaired. Furthermore, management proposed to impair the existing R42 million investment in Pelchem. However, the board only approved the impairment of R19 million. Therefore, the AFS that were submitted to the AGSA reflected and investment in Pelchem of R23 million.

Due to various reasons including but not limited to compliance with the Companies Act 71 of 2008, IFRS 36; PFMA and other considerations, management requested that the debt to equity transaction which is part of the disclaimers be reversed, the board approval was obtained on 27 February 2019.

Emanating from the inclusion of Trade Debt Equity conversion of R115million during 2017/18 and then reversing of this transaction and the impairment thereof in 2018/19, the investment in Pelchem is now zero (0).

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7. INVESTMENTS IN ASSOCIATES

The following table lists all of the associates in the group:

Group	Name of company	% ownership interest						Carrying amount		Fair value	
		2019		2018		2017		2019		2018	
		R '000		R '000		R '000		R '000		R '000	
	Business Venture International No.33 (Pty) Ltd	42.00 %		42.00 %		41.67 %	2	4,333	150	2,404	3,818
	Gamwave (formerly Cyclotope, a subsidiary)	40.00 %		40.00 %		40.00 %	-	-	-	-	-
	Oserix	25.00 %		25.00 %		13.75 %	4,331	148	2,403	4,331	3,816
	Element 42	50.00 %		50.00 %		- %	-	-	-	-	-
							4,333	150	2,404	4,333	3,818
							4,333	150	2,404	4,333	3,818

(1) Associate of Gammatec NDT Supplies SOC Ltd. Gammatec NDT Supplies SOC Ltd holds 25% of Oserix issued share capital. NTP Radio Isotopes SOC Ltd holds 55% of Gammatec NDT Supplies SOC Ltd therefore resulting in the group having significant influence over the associate.

The carrying amounts of Associates are shown net of impairment losses.

The directors' value of the investment in associates is equal to its carrying value.

	Summary of the group's interest in associate			
	2019	2018	2017	
	R '000	R '000	R '000	R '000
Total assets	68,088	63,733		67,872
Total liabilities	40,997	46,492		52,263
Revenue	211,020	109,510		95,284
Profit or loss	2,171	2,327		(3,709)



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Group			Company		
2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

8. LOANS TO (FROM) GROUP COMPANIES

Subsidiaries						
Pelchem SOC Limited	(3,310)	-	-	(13)	1,403	350
Medical Aid Cost Paid by Necsa on behalf of the subsidiaries. These funds recovered from the subsidiaries. The balance outstanding is due to over/under payment made by subsidiaries.						
NTP Radioisotopes SOC Limited	-	-	-	(58)	112	406
Medical Aid Cost Paid by Necsa on behalf of the subsidiaries. These funds recovered from the subsidiaries. The balance outstanding is due to over/under payment made by subsidiaries.						
NTP Radioisotopes SOC Limited	3,310	(3,310)	-	(42,461)	(59,081)	-
NTP initially granted Necsa an Intercompany Loan of R58.5 million at Prime minus 2% payable on 31 March 2019 with main condition that any future dividends will be offset against the loan. Necsa has not being in a position to pay the entire loan however a R20 million dividend was declared by NTP during May 2018 and was offset against the loan resulting in the principal loan being reduced to R38.5 million. Necsa is engaging NTP on extending the loan repayment date to 31 March 2021.						
NTP - FED	-	-	-	50,351	-	-
NTP transfers its liability for discharging Safari Fuel Elements and Control Rods to Necsa as a nuclear licence holder.						
The liability is then discharged to Necsa and funds are deposited to Necsa to discharge this waste in future.						
In October 2018, NTP notified Necsa that the funds will no longer be transferred to Necsa and the debt of R30.6 million for 2017/18 going will not be paid. The total amount owing as at 31 March 2019 is R50.3 million.						
	-	(3,310)	-	7,819	(57,566)	756
Non-current assets	-	-	-	50,351	-	-
Current assets	3,407	66,149	3,327	-	1,515	756
Current liabilities	(3,407)	(66,149)	(17)	(42,532)	(59,081)	-
	-	-	3,310	7,819	(57,566)	756

Credit quality of loans to group companies

The credit quality of loans to Group companies that are neither past due nor impaired can be assessed by reference to historical information about counterparty default rates, as external credit ratings are not available. Loans to Associates are considered medium high quality as no defaults occurred in the past. The loan to NTP Radioisotopes SOC Limited is considered high quality as no defaults occurred in the past, and NTP Radioisotopes SOC Limited has a strong financial position. The credit quality of the loan to Pelchem SOC Limited is considered medium to low due to the fact that Pelchem SOC Limited has an accumulated loss at year end and predicts a loss for the ensuing financial year.

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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

8. LOANS TO (FROM) GROUP COMPANIES (CONTINUED) FAIR VALUE OF LOANS TO AND FROM GROUP COMPANIES

Loans to group companies	-	-	3,310	7,819	(57,566)	756
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The maximum exposure to credit risk at the reporting date is the fair value of each class of loan mentioned above. The Group does not hold any collateral as security.

9. OTHER FINANCIAL ASSETS

At fair value through profit or loss - designated

Foreign-exchange contract asset	-	1,502	7	-	-	-
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Available-for-sale

Listed shares	1,452	409,815	1,303	1,416	-	1,270
Trade and other receivables-instruments at fair value through profit or loss	-	1,710	-	-	-	-
Terms and conditions	193,939	408,287	420,131	193,939	409,815	420,131
Unit trusts						

The reduction of available for sale assets from R408 million in 2018 to R193.9 million in 2019 emanates from the withdrawal of R265 million which was earmarked for discharging of safari, fuel, elements, disposal funds to pay financial operational obligations for 2018/19 financial year.

	195,391	819,812	421,434	195,355	409,815	421,401
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Short term investments

Ring-fenced and 3rd party funds and other short term investments R100 million was used to pay Necsa's financial obligations during the 2018/19 and 2017/18 financial year.	318,930	703,414	768,122	317,191	265,195	230,925
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Loans and receivables

Retention fees receivable (1)	358,475	17,560	17,560	358,475	18,676	17,560
Government Grant receivables on decommissioning and decontamination Stage 2 (2)	33,702	30,452	30,452	33,702	32,200	30,452
	392,177	48,012	48,012	392,177	50,876	48,012

Total other financial assets	906,498	1,572,740	1,237,575	904,723	725,886	700,338
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(1) Retention fees receivable relates to contracts with clients where an amount is withheld until the quality conditions of the contracts have been fulfilled. The fair value approximates the carrying value.

(2) Necsa receives an allocation letter for Stage 2 decommissioning and decontamination, relating specifically and exclusively appropriated to decommissioning and decontamination for operational facilities. The fair value is calculated in terms of the allocation letter received relating to the above mentioned decommissioning and decontamination for operational facilities. Refer to note 41 for further detail.



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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

9. OTHER FINANCIAL ASSETS (CONTINUED)

Non-current assets

Designated as at Fair Value through profit or loss	-	1,502	7	-	-	-
Available-for-sale	195,391	819,812	421,434	195,355	409,815	421,401
Loans and receivables	35,570	32,320	32,125	35,570	34,068	32,125
	230,961	853,634	453,566	230,925	443,883	453,526

Current assets

Short term investments	318,930	703,414	768,122	317,191	265,195	230,925
Loans and receivables	356,607	15,692	15,887	356,607	16,808	15,887
	675,537	719,106	784,009	673,798	282,003	246,812
	906,498	1,572,740	1,237,575	904,723	725,886	700,338

Fair value information

Financial assets at fair value through profit or loss are recognised at fair value, which is therefore equal to their carrying amounts. The following classes of financial assets at fair value through profit or loss are measured to fair value using quoted market prices:

- Listed shares
- Unit trusts

Fair values are determined annually as at the end of the reporting period.

Fair value hierarchy of financial assets at fair value through profit or loss

For financial assets recognised at fair value, disclosure is required of a fair value hierarchy which reflects the significance of the inputs used to make the measurements.

Level 1

Sanlam - Ordinary shares	-	-	86	59	68	53
Old Mutual - Ordinary shares	-	-	1,217	790	1,460	1,217
Quilter Ordinary Shares	-	-	-	330	-	-
Nedbank - Ordinary Shares	-	-	-	237	-	-
Unit Trusts - Collective Investment Schemes	193,939	408,287	221,502	193,939	408,287	221,502
	193,939	408,287	222,805	195,355	409,815	222,772

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R '000	R '000	R '000	R '000	R '000	R '000

10. DEFERRED TAX

Deferred tax asset

Property plant and equipment	(920)	18,369	29,919	-	-	-
Liabilities for health care benefits accrued	(462)	-	(374)	-	-	-
Fair value and IFRS adjustments	(129)	-	-	-	-	-
Other deferred tax liability - 3	-	373	364	-	-	-
Total deferred tax liability	(1,511)	18,742	29,909	-	-	-

Deferred tax asset

Property, plant and equipment	(360)	(17,901)	(17,901)	-	-	-
Provisions, allowances and PRML liability	110,764	16,869	44,964	-	-	-
Fair value and IFRS adjustments	1,229	4,573	3,484	-	-	-
Prepayments	-	-	(264)	-	-	-
Total	111,633	3,541	30,283	-	-	-

The deferred tax assets and the deferred tax liability relate to income tax in the same jurisdiction, and the law allows net settlement. Therefore, they have been offset in the statement of financial position as follows:

Deferred tax asset	79,979	19,509	30,657	-	-	-
Deferred tax liability	(4,683)	259	374	-	-	-
Total net deferred tax asset	75,296	19,768	31,031	-	-	-

11. INVENTORIES

Raw materials	11,005	36,605	29,888	-	-	-
Work in progress	4,479	30,487	(3,342)	917	29,604	(8,808)
Finished goods	28,871	27,261	39,296	-	-	-
Life science products and equipment	10,226	5,691	3,922	-	-	-
Production supplies	25,629	916	20,623	-	-	-
Goods in transit	197,174	12,111	3,597	-	-	-
Consumables	50,136	182,368	165,325	43,920	39,193	33,267
Other inventories for sale	626	-	-	-	-	-
	328,146	295,439	259,309	44,837	68,797	24,459
Inventories (write-downs)	(18,706)	(12,216)	(21,241)	(3,448)	(2,682)	(1,694)
	309,440	283,223	238,068	41,389	66,115	22,765
Carrying value of inventories carried at fair value less costs to sell	309,440	283,223	238,068	41,389	66,115	22,765

During the financial year end 31 March 2019 R 258,389 (2018: R 256,013) (2017: R 254,571) was recognised as an expense for the Company and R 1,514,122 (2018: R 1,445,341) (2017: R 977,972) for the Group.

Impaired amount of categories of inventory

Raw materials	365	-	4,696	-	-	-
Finished goods	18,341	12,216	17,736	3,448	2,682	1,694
Production supplies	-	-	(1,191)	-	-	-
	18,706	12,216	21,241	3,448	2,682	1,694



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R '000	R '000	R '000	R '000	R '000	R '000

12. TRADE AND OTHER RECEIVABLES

Financial Instruments

Trade receivables	327,905	374,499	77,032	91,405	120,720	83,641
Employee costs in advance	25	-	-	-	-	-
Prepayments	41,761	58,322	1,111	-	-	-
Deposits	79	121	38	18	18	-
Staff fuel debtors	1,566	1,569	-	1,566	1,569	-
Other receivables	12,790	8,802	75,261	569	845	64,060
VAT	22,254	16,166	44,918	-	-	-
	406,380	459,479	198,360	93,558	123,152	147,701

Trade and other receivables pledged as security

No trade and other receivables have been pledged as security.

Credit quality of trade and other receivables

Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and control relating to customer credit risk management. The credit quality of a customer is assessed based on an extensive credit rating scorecard and individual credit limits are defined in accordance with this assessment. Outstanding customer receivables are regularly monitored and any shipments to major customers are generally covered by letters of credit or other forms of credit insurance.

Trade receivables

NTP Radioisotopes SOC Ltd (NTP) discharges its Safari Fuel Elements Disposal liability by transferring the liability to Necsa as a licence holder on an annual basis. At the end 2017/18 financial year the liability was determined to be R30.2 million. This amount was invoiced to NTP however NTP notified the Necsa Board of Directors in October 2018 that NTP will no longer be paying these funds to Necsa.

However, there was structural changes such as appointment of the new board on 06 December 2018 as well as delayed signature of AFS that has significantly contributed in the finalization of this matter. To this extent, Necsa is still reviewing and consulting on the NTP resolution to determine the correct procedure on handling Safari Fuel Elements Disposal amount going forward. In the meantime an amount of R27.2m including VAT is due for the 2018/19 financial year and has been provided on the AFS but not invoiced as the final resolution is awaited.

The total amount related to Safari Fuel Elements Disposal is R50.3 million excluding the VAT. The investigation outcome will determine the correct treatment and or classification of this amount as it is long term in nature and will be removed from Trade Debtors once proper guidance has been obtained. The amounts are correct however classification is being reviewed in line with the applicable legislation such as licence, IFRS and Companies Act no 71 of 2008.

Fair value of trade and other receivables

Trade and other receivables	406,380	459,479	198,360	93,558	123,152	147,701
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Fair value of trade and other receivables has been determined using unobservable inputs (level 3).

Trade and other receivables are initially measured at fair value and are subsequently measured at amortised cost using the effective interest rate method.

Debtors have been reviewed on an individual basis and where extended payment terms were granted the effect of the time value of money has been taken into account. This was done to determine the finance portion granted. The carrying value of Trade and other receivables is reduced by an interest charge of R5,647 (2018: R2,461) and (2017: R1,445) to discount the carrying value to amortised cost for the Company and an interest charge of R 8769 (2018: R5,570) and (2017: R5,927) for the Group.

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R '000	R '000	R '000	R '000	R '000	R '000

12. TRADE AND OTHER RECEIVABLES (CONTINUED)

Trade and other receivables past due but not impaired

Trade and other receivables which are past due are assessed for impairment on an ongoing basis. At 31 March 2019, R123 844 (2018: R83,306) and (2017: R21,406) were past due but not impaired for the Company and R195,448 (2018: R147,689) were past due but not impaired for the Group. The ageing of these amounts are less than 1 year outstanding.

Trade and other receivables impaired

As of 31 March 2019, trade and other receivables of R14,778 (2018: R60,858); (2017: R46,167) were past due and provided for possible impairment by the Company and R75,107 (2018: R49,605); (2017: R21,297) were past due and provided for possible impairment by the Group. These amounts were fully provided for due to the uncertainty of its recoverability.

The debtors' age analysis was R305.3 million as at 31 March 2019 of which R164.7 million relates to Pelchem SOC Ltd a 100% owned subsidiary of Necsa. The R164.7 million has been fully provided for due to the fact that Pelchem is not in a financial position to pay Necsa. A strategic decision will be taken on how to proceed with Pelchem's debt. There is also an amount of R30 million that was invoiced for NTP to discharge the Safari Fuel Waste which is a long-term investment and liability, and appropriate approval will be obtained in order to ensure that this amount is classified as a non-current asset and non-current liability. There is also an amount of R21 million that has been removed from debtors and reclassified correctly.

Reconciliation of provision for impairment of trade and other receivables

Opening balance	80,925	77,913	49,605	65,149	65,149	50,458
Provision for impairment	-	3,012	78,096	-	-	60,858
Amounts written off as uncollectable	-	-	(679)	-	-	(616)
Unused amounts reversed	-	-	(49,109)	-	-	(45,551)
	80,925	80,925	77,913	65,149	65,149	65,149

The creation and release of provision for impaired receivables have been included in operating expenses in profit or loss.

The maximum exposure to credit risk at the reporting date is the fair value of each class of loan mentioned above. The Group does not hold any collateral as security.

The credit period on sales of goods is 30 days from date of statement. Interest on overdue accounts is charged based on management discretion. It is the policy of the Group to provide fully for receivables that are identified on an individual basis as unrecoverable. The other classes within trade and other receivables do not contain impaired assets.

Age analysis 2019						
Group	Current	1-30 days	31-60 days	61-90 days	over 90 days	Total
	134,707	33,314	8,051	27,921	182,364	400,494
NECSA	Current	1-30 days	31-60 days	61-90 days	over 90 days	Total
	69,095	9,749	5,869	2,848	159,721	283,419



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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

13. CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of:

Cash on hand	105	90	68	59	45	53
Bank balances	105,825	83,779	99,629	16,658	14,777	37,179
Short-term deposits	264,938	423,828	-	-	-	-
Bank overdraft	(45,959)	(32,000)	(124,887)	(20,000)	(5,000)	(101,847)
	324,909	475,697	(25,190)	(3,283)	9,822	(64,615)
Current assets	370,868	507,697	99,697	16,717	14,822	37,232
Current liabilities (1)	(45,959)	(32,000)	(124,887)	(20,000)	(5,000)	(101,847)
	324,909	475,697	(25,190)	(3,283)	9,822	(64,615)

(1) The current liabilities are made up as follows:

Current liabilities

Gammatec	(7,962.000)	-	3.000	-	-	-
Pelchem	(18,000.000)	-	20.000	-	-	-
Necsa (1)	(20,000.000)	-	101.000	-	-	-
	(45,962.000)	-	124.000	-	-	-

(1) The Necsa bank overdraft has been classified as level 1 in the Fair Value Hierarchy, the main reason thereof is that all variables were known and agreed up front. To fund the financial obligations relating to the second quarter of 2018/19 financial year, Necsa utilized R 20 000 000 of the Overnight Loan Facility during August 2018 (2018/2019 financial year) and utilized R 5 million in the 2017/2018 financial year.

Details of facilities

The Nedbank bank overdraft is secured, Necsa has signed suretyship for the R20 000 000 overdraft facility. The overdraft facility is reviewed once a year by Nedbank. There is no set repayment terms of the overdraft and interest is charged at prime less 1.5%. There is no restrictions on the realisability of any of the cash and cash equivalents. The credit quality of cash at bank and short term deposits, excluding cash on hand that are neither past due nor impaired can be assessed by reference to external credit ratings (if available) or historical information about counterparty default rates:

Overnight loan facility	20,000	20,000	120,000	20,000	20,000	120,000
Asset based financing	8,000	8,000	8,000	8,000	8,000	8,000
Bills of exchange	100	100	100	-	-	-
CFC	2,000	2,000	2,000	-	-	-
Forex-potential future exposure trading limits	1,280	-	-	-	-	-
Commitments regarding guarantees (local)	-	11,300	11,300	-	-	-
Corporate credit card	115	115	300	-	-	-
FEC's	92,115	117,115	86,515	60,000	60,000	30,000
Fleet management service	145	145	145	-	-	-
Forex cancellation limit	750	750	750	-	-	-
Forex settlement limit	7,000	7,000	7,000	-	-	-
General short term banking facility	55,200	75,200	75,200	15,000	15,000	15,000
Guarantees by bank	11,300	11,300	11,300	-	-	-
Letter of credit	450	450	45,000	-	-	-
Medium term loan	-	433	967	-	-	-
Overdraft	11,500	11,500	15,600	-	-	-
Vehicle and asset finance	5,290	5,290	6,890	-	-	-

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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

14. DISCONTINUED OPERATIONS

The Board of Gammatec Middle East General Trading LLC and the Board of Gammatec NDT Supplies SOC Ltd resolved to discontinue all direct operations of Gammatec Middle East General Trading LLC during the 2018 financial year. The assets and liabilities as at 31 March

2019 are set out below. The decision was made to discontinue operations due to the lack of return and suitable profitable trading activities. During the 2018 year, all property, plant and equipment as well as intangibles (computer software) were sold at a profit of R108,104 and included in Profit on discontinued operations in the Consolidated Statement of Profit or Loss and Other Comprehensive Income. All inventory at the date of sale was disposed of at book value during 2018.

At year end R619,743 (2018: R2,685,360) is included in trade receivables as the outstanding balance of the sales transaction.

The Board of Gammatec Aseana NDT Supplies SDN.BHD and the Board of Gammatec NDT Supplies SOC Ltd resolved to discontinue all direct operations of Gammatec Aseana NDT Supplies SDN.BHD during the 2018 financial year. The assets and liabilities as at 31 March

2018 are set out below. The decision was made to discontinue operations due to the lack of return and suitable profitable trading activities. During the 2018 year, all property, plant and equipment as well as intangibles (computer software) were sold at a profit of R120,268 and included in Profit on discontinued operations in the Consolidated Statement of Profit and Loss and Other Comprehensive Income. All inventory at the date of sale was disposed of at book value.

At year end R1,420,488 (R1,968,113) is included in trade receivables as the outstanding balance of the sales transaction.

It is expected that the trade receivables of both companies will be settled by the relevant customers within the next 12 months. Trade payables will also be settled within the next 12 months.

Assets and liabilities

Assets of discontinued operations

Trade and other receivables	3,333	-	-	-	-	-
Other assets	115	-	-	-	-	-
	3,448	-	-	-	-	-

Liabilities of discontinued operations

Trade and other payables	295	-	-	-	-	-
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15. SHARE CAPITAL

Authorised

500,000,000 Ordinary shares of R1 each	500,000	500,000	500,000	500,000	500,000	500,000
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There were no changes in authorised share capital.

Reconciliation of number of shares issued:

Reported as at 01 April 2018	2,205	2,205	2,205	2,205	2,205	2,205
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Issued

Ordinary	2,205	2,205	2,205	2,205	2,205	2,205
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Group			Company		
2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

16. OTHER FINANCIAL LIABILITIES

At fair value through profit (loss) - designated

Foreign exchange contract	1,963	7,861	5,474	1,118	5,949	756
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Held at amortised cost

Standard Bank - Australia Investment	-	233	633	-	-	-
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This loan is secured by an unrestricted cession of book debts and a unrestricted multiple pledge of calls, notice and SBSA fixed deposit accounts. Interest is charged at prime rate. The loan has to be repaid in equal monthly installments of R 33,333.33 over 60 months.

First National Bank - Mortgage	5,884	7,109	9,280	-	-	-
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This loan is secured by a first mortgage bond registered over land and buildings Portion 91 of Farm 601, Klipplaatdrif, Vereening (Note 4). Interest is charged at prime rate minus 1%. The bond is repayable in equal monthly installments of R150,162 over 120 months.

Less: Short term portion	(1,476)	(1,352)	(2,219)	-	-	-
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IDC Loan	-	-	7,500	-	-	-
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Pelchem have obtained from the IDC during the financial year 2013/14, a R 30 million loan in terms of their job fund program.	-	-	-	-	-	-
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The Minister of Energy approved the borrowing from IDC on 12 April 2013. The loan was fully utilized by 31 March 2014.

These funds were used as working capital. The R30 million is repayable over 4 years starting 1 April 2014 as at interest of 5%.

NTP Radioisotopes SOC Ltd have signed suretyship for the R30 million should Pelchem not be in a position to repay the loan. The loan amount was fully paid as of 31 March 2018.

	4,408	5,990	15,194	-	-	-
	6,371	13,851	20,668	1,118	5,949	756

Non-current liabilities

At amortised cost	2,932	4,405	5,475	-	-	-
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Current liabilities

Fair value through profit or loss	1,963	7,861	5,474	1,118	5,949	756
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At amortised cost	1,476	1,585	2,219	-	-	-
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	3,439	9,446	7,693	1,118	5,949	756
	6,371	13,851	13,168	1,118	5,949	756

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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

17. FINANCE LEASE LIABILITIES

Minimum lease payments due						
• within one year	3,645	2,267	3,409	2,093	2,054	2,027
• in second to fifth year inclusive	4,164	1,669	2,605	1,499	1,597	2,319
• later than five years	-	-	-	-	-	-
	7,809	3,936	6,014	3,592	3,651	4,346
less: future finance charges	(919)	(383)	(709)	(367)	(365)	(598)
Present value of minimum lease payments	6,890	3,553	5,305	3,225	3,286	3,748
Present value of minimum lease payments due						
• within one year	3,070	649	1,756	1,840	450	1,058
• in second to fifth year inclusive	3,819	2,300	3,549	1,385	2,239	2,690
• later than five years	-	-	-	-	-	-
	6,889	2,949	5,305	3,225	2,689	3,748
Non-current liabilities	3,819	2,300	3,549	1,385	2,239	2,690
Current liabilities	3,070	649	1,756	1,840	450	1,058
	6,889	2,949	5,305	3,225	2,689	3,748

The average lease term for motor vehicles and electronic office equipment is 36 months and the average effective borrowing rate was 9.5% (2019: 9.5% ; 2018: 9.5%).

Interest rates are linked to prime at the contract date. All leases have fixed repayments and no arrangements have been entered into for contingent rent.

Necsa entered into a finance lease arrangement as lessee for the following:

Electronic office equipment - ownership transfers at the end of the lease term to Necsa and the lease term is for the major part of the economic life of the asset.

Motor vehicles leased from AVIS.

There are no unguaranteed residual values of assets leased under finance leases at the end of the reporting period.

The Group's obligations under finance leases are secured by the lessor's charge over the leased assets (refer to Note 5). The Lessor will at all times remain the owner of the vehicle and the vehicle may only be utilised for the rental period or any extended period. The pledging agreement does not impede the use or control over the assets.

18. RETIREMENT BENEFITS

The Company and its two major subsidiaries, NTP Radioisotopes and Pelchem, operates a provident fund scheme which is governed by the Pensions Fund Act No. 24 of 1956. The scheme is generally funded through payments to insurance companies or trustee administered funds, determined by periodic actuarial calculations. The Company has defined contribution plans established in 1994. These contribution plans are compulsory for every permanent employee employed in accordance with the conditions of employment, primarily by means of monthly contributions to the Necsa Retirement Fund. A defined contribution plan is a provident fund under which the Company pays fixed contributions into a separate entity. The Company has no legal or constructive obligations to pay further contributions if the fund does not hold sufficient assets to pay all employees the benefits relating to employee services in the current and prior periods. The contributions are recognised as an expense when they are due. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in the future payments is available.

The Necsa Retirement Fund is revalued by an independent Actuary on an annual basis. The last actuarial valuation was performed in April

2019 for the year ending 31 March 2019. The conclusion made in the latest actuarial valuation was that the Fund is currently in a good financial position and should remain so, based on the contribution rates payable in terms of the rules of the Fund, until the next actuarial valuation.



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18. RETIREMENT BENEFITS (CONTINUED)

Defined benefit plan

NECSA and its two major subsidiaries, NTP Radioisotopes and Pelchem's post-employment health care liabilities consists of a commitment to pay a portion of the members' post-employment medical scheme contributions. This liability is also generated in respect of dependants who are offered continued membership of the medical scheme on the death of the primary member. The schemes have been valued per individual entity namely NECSA, NTP Radioisotopes and Pelchem, which reflects the group figures. These schemes have been disclosed separately below.

Members employed before 1 September 2004 are entitled to a 100% subsidy of medical scheme contributions in retirement, provided they have been members of the medical scheme for at least 10 years. Should a member be on the medical scheme for less than 10 years at retirement, they will be entitled to a 10% subsidy for each year they were active on the medical scheme during employment at NECSA.

Eligible members receive a Rand amount based on the Essential Core option's contributions in 2005, increasing annually in line with consumer price inflation ('CPI'). The Rand amounts for 2019 are R1,287 for a single member and R2,121 for a married member. The child dependant subsidy for 2019 is R538.

If a member qualifies to upgrade to a Comprehensive option as per the subsidy rules then NECSA will subsidise an additional Rand amount for the upgrade. The additional Rand amounts for members on the Classic Comprehensive option in 2019 are R719 for a single member and R1,305 for a married member. The additional Rand amounts for members on the Essential Comprehensive option in 2019 are R728 for a single member and R1,318 for a married member.

Members who do not qualify for an upgrade to a Comprehensive option or who do not belong to a Comprehensive option receive an additional Rand amount for the Medical Savings Account (MSA) contributions. The additional Rand amount for 2019 is R623 per member, irrespective of marital status.

Members who retired before 1 July 1990, referred to as the "Old 100% Group", receive an additional Rand amount of R240 for 2019, irrespective of marital status.

Members who retired before 1 July 1990, referred to as the "Old 100% Group", receive an additional Rand amount of R240 for 2019, irrespective of marital status. Dependants of eligible continuation members receive a subsidy before and after the death of the principal member.

NECSA and its two major subsidiaries, NTP Radioisotopes and Pelchem's subsidy of its current employees' future post-employment medical scheme contributions and current pensioners' medical scheme contributions presents certain risks to the Company, the most significant of which are summarised below. The majority of these risks mainly apply to the Pelchem group only.

Subsidy inflation	The post-employment health care liability is linked to consumer price inflation. Higher consumer price inflation than expected will lead to higher liabilities.
Longevity	The employer's subsidy covers the post-employment medical scheme contributions in retirement until the main pensioner's death. On the main pensioner's death the subsidy will continue at a reduced level based on the contributions for the remaining dependants. The longevity risk is the risk that pensioners will live longer than expected. Possible contributing factors are medical advances, better health care and greater emphasis on following healthier lifestyles. This would lead to benefits being payable for longer than expected.
Cash flow risk	The employer pays the subsidy amounts in respect of the pensioners either directly to the pensioner or to the medical aid. There is a risk to the employer that, due to unforeseen circumstances, funds may not be available at the time that they are required.
Changes in bond yields and CPI	A decrease in the bond yields used to determine the discount rate will increase the employer's reported post-employment health care liability. An increase in CPI will result in a higher subsidy inflation assumption, which consequently will lead to a higher reported post-employment health care liability. High volatility in the above rates may lead to volatile balance sheet and income statement disclosures.
Future changes in legislation	The Government's stated intention to implement a National Health Insurance system in the near future may lead to a requirement to provide some level of compensation to eligible members or to fund additional amounts into the system. Furthermore, changes in tax legislation affecting the subsidy may also pose a risk to both the employer and the recipients of the subsidy.

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18. RETIREMENT BENEFITS (CONTINUED)

Company developments:

NECSA and its two major subsidiaries, NTP Radioisotopes and Pelchem purchased additional annuities with effect from 1 May 2016 to cater for new retirements since the previous purchase. In addition, contributions were also made towards the recurring premium contracts in place.

The most recent actuarial valuation of the plan assets and the present value of the defined benefit obligation were carried out at 31 March

2019 by Mr. Elford Sellarse, Fellow of the Institute of Actuaries of South Africa. The present value of the defined benefit obligation, and the related current service cost and past service cost, were measured using the projected unit credit method. MSS also undertook the previous valuation for NECSA and its two major subsidiaries, NTP Radioisotopes and Pelchem as at 31 March 2019.

MMI Specialised Solutions ('MSS') quantify the present value of post-employment health care liabilities in terms of IAS19 for:

a) Current continuation members

b) Future continuation members emanating from the current active medical scheme members employed by NECSA in particular, the funded status of the post-employment plan as at the valuation date will be determined and compared to the projected liability calculated as at 31 March 2016. An expense for the 2016/17 financial year will be derived and a projected expense for the forthcoming year will be calculated for budget purposes. The report complies with the relevant professional guidance from the Actuarial Society of South Africa as described in Advisory Practice Note APN301.

The principal assumptions used for the purposes of the actuarial valuations for NECSA and its two major subsidiaries, NTP Radioisotopes and Pelchem were as follows.

Economic assumptions:	Valuation at		
	2019	2018	2017
Discount rate (D)	10.00 %	8.90 %	9.90 %
Consumer Price Index (CPI)*	6.50 %	6.50 %	7.40 %
Subsidy contribution increase rate (H)	6.50 %	6.50 %	7.40 %
Net discount rate $((1+D)/(1+H)-1)$	3.29 %	2.25 %	2.33 %
Expected return in Plan Assets	10.00 %	8.90 %	9.90 %

* This is the market expectation of long-term CPI.

We have estimated the total duration of the liability to be 12.5 years, based on the previous valuation results.

The rates derived are based on prevailing yields as at 29 March 2019. We used a convention of rounding the derived rates to the nearest 0.1%, similar to the previous valuation.

While it is essential that the assumptions are individually justifiable, it is the relative levels of the discount rate and health care cost inflation to one another that are important in the determination of the liability, rather than the nominal values.

Discount rate

We have derived the discount rate from the BEASSA zero-coupon yield curve. We used the spot rate on the nominal curve with duration equal to the rounded liability duration of 12.5 years to derive the discount rate of 10.00% per annum.

Consumer price index inflation

The risk free market expectation of long-term Consumer Price Inflation (CPI) of 6.50% per annum was derived from the differential between the nominal yield curve and real yield curve at the same duration.

Subsidy contribution increase rate

The subsidy contribution increase rate was set at CPI.

Expected return on Plan Assets

The expected return on Plan Assets was set at the discount rate.

Comparison to previous valuation

The financial assumptions have been set on a consistent basis with the previous year's valuation.



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18. RETIREMENT BENEFITS (CONTINUED)

Demographic assumptions:	Valuation at		
	2019	2018	2017
Expected retirement age (Males and females)	65.00	65.00	65.00

Family structure

	Current valuation	
	Active members	Pensioners
Age difference between husband and wife	Actual ages used if available / Husband 4 years older than wife	Actual ages used
Proportion married	Assumed 90% married at retirement	Actual marital status used

In valuing the death-in-service healthcare liability, it is necessary to make a number of additional assumptions. We assumed that the percentage married of active members increases from 0% at age 21 to 90% at age 45 and stays at 90% until retirement. We have assumed the following percentage married for valuing death-in-service healthcare liability.

Example at stated age	Proportion married
21	0%
25	15%
30	34%
35	53%
40	71%
45+	90%

We have assumed that pensioner's children and orphans will be subsidised until the age of 21. We have not made any allowance for active members to have child dependants in retirement.

Continuation percentages:

We assumed that 0% of current in-service members eligible for a retirement subsidy would discontinue medical scheme membership upon reaching retirement with NECSA on the grounds of affordability. Similarly, we assumed that 0% of dependants of current in-service members eligible for a death-in-service subsidy would discontinue medical scheme membership on the grounds of affordability upon the death-in-service of the principal member.

The demographic assumptions are the same as those used in the previous valuation.

Decrement assumptions:	Valuation at		
	2019	2018	2017
Mortality rates			
Active members	SA 85-90 (Light)	SA 85-90 (Light)	SA 85-90 (Light)
Pensioners	PA (90) rated down 2 years	PA (90) rated down 2 years	PA (90) rated down 2 years

In addition to the above pensioner mortality assumption, we have made allowance for 1.00% p.a. improvement in mortality. We have used a base year of 2006 (i.e. as at valuation date there has been 13 years of mortality improvements).

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18. RETIREMENT BENEFITS (CONTINUED)

Withdrawal rates

Example at stated age	Proportion married
20	15%
25	10%
30	7%
35	4%
40	2%
45+	0%

The decrement assumptions are the same as those used in the previous valuation.

Reconciliation of assets and liabilities recognised on the Statement of financial position

	Group			Company		
	2019	2018	2017	2019	2018	2017
	R '000	R '000	R '000	R '000	R '000	R '000
Present value of the defined benefit obligation-wholly unfunded	370,430	413,738	399,769	325,403	363,329	353,519
Present value of the defined benefit obligation-partially or wholly funded	(30,312)	(34,577)	(32,547)	(10,562)	(13,198)	(12,935)
Fair value of plan assets	340,118	379,161	367,222	314,841	350,131	340,584
Net actuarial gains not recognised	-	-	-	-	-	28,539
Past service cost not recognised	-	-	28,539	-	-	-
Net liability/(asset) in statement of comprehensive income	340,118	379,161	395,761	314,841	350,131	369,123
Non-current liabilities	(305,636)	(345,672)	(371,953)	(280,359)	(316,642)	(346,471)
Current liabilities	(34,482)	(33,489)	(23,808)	(34,482)	(33,489)	(22,652)
	(340,118)	(379,161)	(395,761)	(314,841)	(350,131)	(369,123)

Reconciliation of net liability recognised on the balance sheet

Opening balance	362,561	379,161	379,161	350,131	369,123	383,128
Interest cost	-	36,433	40,403	31,254	33,823	35,838
Current service cost	-	2,112	5,050	3,397	3,405	3,777
Expected return on Plan Assets	-	-	(5,052)	(2,825)	(2,995)	(3,099)
Actuarial(gain)/loss recognised in profit or loss	-	-	(19,797)	-	-	(17,415)
Past service cost recognized	-	-	(3,804)	-	(28,539)	(3,804)
Net annual cost recognised in profit or loss	-	38,545	16,800	31,826	5,694	15,297
Actuarial (gains)/loss recognised through OCI	-	(561)	(23,977)	(33,627)	7,160	(23,055)
Expected employer benefit payments	-	(54,584)	23,543	(24,315)	(23,746)	23,055
Benefit payments from Plan Assets	-	-	(29,811)	24,315	23,746	(29,302)
Employer prefunding / additional contributions	-	-	-	(33,489)	(31,846)	-
Closing balance	362,561	362,561	365,716	314,841	350,131	369,123

Reconciliation of present value of obligations in excess of Plan Assets

Opening balance	-	368,020	376,793	350,131	340,584	350,785
Interest cost	-	36,433	40,403	31,254	33,823	35,838
Current service cost	-	-	5,050	3,397	3,405	3,777
Expected return on Plan Assets	-	-	(5,052)	(2,825)	(2,995)	(3,099)
Actuarial (gain)/loss	-	(7,721)	(19,797)	(33,627)	7,160	(17,415)
Expected employer benefit payments from Plan Assets	-	-	23,977	24,315	23,746	23,055
Expected employer benefit payments	-	4,112	(23,543)	(24,315)	(23,746)	(23,055)
Employer prefunding contributions	-	(21,683)	(29,811)	(33,489)	(31,846)	(29,302)
Current service cost	-	379,161	368,020	314,841	350,131	340,584



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18. RETIREMENT BENEFITS (CONTINUED)

Reconciliation of unrecognised past service cost

	Company		
	2019	2018	2017
	R '000	R '000	R '000
Opening unrecognised past service cost	-	28,539	32,343
Past service cost arising	-	-	(3,804)
Past service cost recognized	-	(28,539)	-
Closing unrecognised past service cost	-	-	28,539
Total unrecognised past service cost at year end	-	-	28,539

Sensitivity analysis:

Company:

The liability derived by this valuation is dependent on the assumptions set out above, which may or may not be borne out in practice. Variations from these assumptions will emerge in future years as experience gains or losses and will be recognised by NECSA in accordance with its accounting policies.

The valuation results are sensitive to changes in the underlying assumptions. The effects of varying these assumptions are illustrated below.

The sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. This is a limitation of a sensitivity analysis.

Discount rate

The table below shows the impact of a 1% increase and decrease in the discount rate.

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	359,907	325,403	296,373
Employer's service and interest cost	34,408	33,969	33,533

Therefore, a 1% increase in the discount rate assumption will result in an 8.9% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in a 10.6% increase in the accrued liability.

Consumer price inflation

The valuation basis assumes that the employer's medical subsidy contribution rate will increase in line with consumer price inflation annually. The effect of a 1% increase and decrease in the inflation rate is as follows:

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	296,042	325,403	359,819
Employer's service and interest cost	30,634	33,969	37,904

Therefore, a 1% increase in the inflation rate assumption will result in a 10.6% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 9.0% decrease in the accrued liability.

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18. RETIREMENT BENEFITS (CONTINUED)

Mortality

The table below shows the impact of changing the mortality basis from PA(90)-2 with a 1.0% improvement, to PA(90)-3 with a 1.0% improvement and PA(90)-1 with a 1.0% improvement.

	PA(90) – 1*	Valuation basis	PA(90) – 3*
	R'000	R'000	R'000
Employer's accrued liability	336,608	325,403	314,255
Employer's service and interest cost	355,155	33,969	32,788

*The mortality basis includes mortality improvements of 1.0% per annum, with a base year of 2006.

Therefore, a one year down-rating in the post-retirement mortality assumption will result in a 3.4% increase in accrued liability. Similarly, a one year upward-rating in the post-retirement mortality assumption will result in a 3.4% decrease in the accrued liability.

A one year down-rating of the mortality assumption, assumes that a person currently aged x will experience mortality equivalent to that of a person aged x-1.

Expected retirement age

The table below shows the impact of a 1 year increase and decrease in the average retirement age assumption (which is the age that the liability is assumed to be fully accrued). The impact of reducing the average retirement age by two years is also shown in the table below. The average retirement age is assumed to be 65 years.

	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000
Employer's accrued liability	330,967	325,403	319,844
Employer's service and interest cost	34,485	33,969	33,283

Therefore, an increase of 1 year in the average retirement age assumption will result in a 1.7% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 1.7% increase in the accrued liability.

Group: Discount rate

The table below shows the impact of a 1% increase and decrease in the discount rate.

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	465,311	413,739	371,256
Employer's service and interest cost	41,022	40,092	39,214

Therefore, a 1% increase in the discount rate assumption will result in a 15.3% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in a 19.6% increase in the accrued liability.

Consumer price inflation

The valuation basis assumes that the employer's medical subsidy contribution rate will increase in line with consumer price inflation annually. The effect of a 1% increase and decrease in the inflation rate is as follows:

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	371,019	413,739	464,808
Employer's service and interest cost	35,568	40,092	45,547

Therefore, a 1% increase in the inflation rate assumption will result in a 19.6% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 15.5% decrease in the accrued liability.



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18. RETIREMENT BENEFITS (CONTINUED)

Mortality

The table below shows the impact of changing the mortality basis from PA(90)-2 with a 1.0% improvement, to PA(90)-3 with a 1.0% improvement and PA(90)-1 with a 1.0% improvement.

	PA(90) – 1*	Valuation basis	PA(90) – 3*
	R'000	R'000	R'000
Employer's accrued liability	428,532	413,739	399,073
Employer's service and interest cost	41,530	40,092	38,664

*The mortality basis includes mortality improvements of 1.0% per annum, with a base year of 2006.

Therefore, a one year down-rating in the post-retirement mortality assumption will result in a 2.7% increase in accrued liability. Similarly, a one year upward-rating in the post-retirement mortality assumption will result in a 2.7% decrease in the accrued liability.

A one year down-rating of the mortality assumption, assumes that a person currently aged x will experience mortality equivalent to that of a person aged x-1.

Expected retirement age

The table below shows the impact of a 1 year increase and decrease in the average retirement age assumption (which is the age that the liability is assumed to be fully accrued). The impact of reducing the average retirement age by two years is also shown in the table below. The average retirement age is assumed to be 65 years.

	2 years younger	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000	R'000
Employer's accrued liability	-	422,184	413,739	399,073
Employer's service and interest cost	-	40,902	40,092	39,214

Therefore, an increase of 1 year in the average retirement age assumption will result in a 4.7% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 5.0% increase in the accrued liability. A reduction of 2 years in the average retirement age assumption will result in a 10.2% increase in the accrued liability.

NTP Radio Isotopes

Discount rate

The table below shows the impact of a 1% increase and decrease in the discount rate.

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	24,722	21,379	18,683
Employer's service and interest cost	2,429	2,293	2,171

Therefore, a 1% increase in the discount rate assumption will result in a 12.9% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in a 16.0% increase in the accrued liability.

Consumer price inflation

The valuation basis assumes that the employer's medical subsidy contribution rate will increase in line with consumer price inflation annually. The effect of a 1% increase and decrease in the inflation rate is as follows:

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	18,655	21,379	24,705
Employer's service and interest cost	1,981	2,293	2,676

Therefore, a 1% increase in the inflation rate assumption will result in a 15.9% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 13.0% decrease in the accrued liability.

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18. RETIREMENT BENEFITS (CONTINUED)

Mortality

The table below shows the impact of changing the mortality basis from PA(90)-2 with a 1.0% improvement, to PA(90)-3 with a 1.0% improvement and PA(90)-1 with a 1.0% improvement.

	PA(90) – 1*	Valuation basis	PA(90) – 3*
	R'000	R'000	R'000
Employer's accrued liability	22,009	21,379	20,748
Employer's service and interest cost	2,361	2,293	2,224

*The mortality basis includes mortality improvements of 1.0% per annum, with a base year of 2006.

Therefore, a one year down-rating in the post-retirement mortality assumption will result in a 2.9% increase in accrued liability. Similarly, a one year upward-rating in the post-retirement mortality assumption will result in a 2.9% decrease in the accrued liability.

A one year down-rating of the mortality assumption, assumes that a person currently aged x will experience mortality equivalent to that of a person aged x-1.

Expected retirement age

The table below shows the impact of a 1 year increase and decrease in the average retirement age assumption (which is the age that the liability is assumed to be fully accrued). The impact of reducing the average retirement age by two years is also shown in the table below. The average retirement age is assumed to be 65 years.

	2 years younger	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000	R'000
Employer's accrued liability	-	22,208	21,379	20,626
Employer's service and interest cost	-	2,373	2,293	2,193

Therefore, an increase of 1 year in the average retirement age assumption will result in a 3.5% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 3.9% increase in the accrued liability.

	PA(90) – 1*	Valuation basis	PA(90) – 3*
	R'000	R'000	R'000
Employer's accrued liability	22,009	21,379	20,748
Employer's service and interest cost	2,361	2,293	2,224

*The mortality basis includes mortality improvements of 1.0% per annum, with a base year of 2006.

Therefore, an increase of 1 year in the average retirement age assumption will result in a 3.8% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 4.0% increase in the accrued liability. A reduction of 2 years in the average retirement age assumption will result in an 8.0% increase in the accrued liability.

A one year down-rating of the mortality assumption, assumes that a person currently aged x will experience mortality equivalent to that of a person aged x-1.



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18. RETIREMENT BENEFITS (CONTINUED)

Expected retirement age

The table below shows the impact of a 1 year increase and decrease in the average retirement age assumption (which is the age that the liability is assumed to be fully accrued). The impact of reducing the average retirement age by two years is also shown in the table below. The average retirement age is assumed to be 65 years.

	2 years younger	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000	R'000
Employer's accrued liability	366,883	360,221	353,519	347,306
Employer's service and interest cost	38,546	37,894	37,228	36,414

Therefore, an increase of 1 year in the average retirement age assumption will result in a 1.8% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 1.9% increase in the accrued liability. A reduction of 2 years in the average retirement age assumption will result in a 3.8% increase in the accrued liability.

Fair value

Company

NECSA purchased an insurance policy in the form of a company-owned annuity policy, which qualifies as a Plan Asset, effective as at 1 March 2011. Following this, six further policies were purchased with effective dates of 1 July 2012, 1 May 2013, 1 May 2014, 1 May 2015 and 1 May 2016, 1 May 2017 and 1 May 2018.

As at 31 March 2019, the policy value of the Plan Asset provided by the insurer was R5,511,631.

The annuity portfolio is made up of a Growth Account and a Guaranteed Account. Increases are guaranteed at a minimum of CPI per annum. Funds may be transferred from the Growth Account to the Guaranteed Account annually to fund any increase in Employer Contributions in excess of the guaranteed annuities. Furthermore, the Growth Account is used for interim subsidies for new retirees until the annual annuity purchase.

	31 March 2019	31 March 2018	31 March 2017
	R'000	R'000	R'000
Guaranteed account	5,397	9,649	1,260
Growth account	114	388	452
Market value of Plan Asset	5,511	10,037	1,712

IAS 19 requires Plan Assets to be accounted for at fair value. To ensure comparability and consistency between the asset and liability valuation, the fair value of the Guaranteed Account was calculated as the present value of the liabilities (only for pensioners already on the Momentum annuity policy) using current valuation assumptions, less the present value of future outstanding premiums (after deducting administration costs, solvency and profit margins in the future premiums). For this, we have assumed admin costs of 2.7% and another 8% margin to cover solvency and profit margins. The fair value of the Growth Account was set at the market value.

The fair value of the Plan Asset is therefore set as follows:

	31 March 2019	31 March 2018	31 March 2017
	R'000	R'000	R'000
Guaranteed account	10,448	12,810	15,127
Growth account	114	388	452
Fair value of Plan Asset	10,562	13,198	15,579

Group

Pelchem:

We are not aware of any assets set aside for post-employment medical aid funding that qualify as Plan Assets in terms of the requirements of IAS19. As such we have ascribed a nil value to the fair value of Plan Assets.

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18. RETIREMENT BENEFITS (CONTINUED)

NTP Radio Isotopes:

NTP purchased an insurance policy in the form of a company owned annuity policy, which qualifies as a Plan Asset, effective as at 1 March 2011.

As at 31 March 2018, the policy value of the Plan Asset provided by the insurer was R21,688.

The annuity portfolio is made up of a Growth Account and a Guaranteed Account. Increases are guaranteed at a minimum of CPI per annum. Funds are transferred from the Growth Account to the Guaranteed Account to fund the purchase of annuities for new retirees. The account may also be used to fund any increase in Employer Contributions in excess of the guaranteed annuities.

At the current and previous valuation date, the values of each of these accounts were as follows:

	31 March 2019	31 March 2018	31 March 2017
	R'000	R'000	R'000
Guaranteed account	10,257	8,008	10,667
Growth account	11,431	12,478	10,466
Market value of Plan Asset	21,688	20,486	21,133

IAS 19 requires Plan Assets to be accounted for at fair value. To ensure comparability and consistency between the asset and liability valuation, the fair value of the Guaranteed Account was calculated as the present value of the liabilities with increases at CPI using current valuation assumptions. The fair value of the Growth Account remains at market value (this was limited to the value of accrued liability as this also funds future service liabilities).

The fair value of the Plan Asset is therefore set as follows:

	31 March 2019	31 March 2018	31 March 2017
	R'000	R'000	R'000
Guaranteed account	14,560	19,584	19,612
Growth account	14,470	-	-
Fair value of Plan Asset	29,030	19,584	19,612

19. DEFERRED INCOME

Government grants for future expenditure:

Non-current liabilities	539,209	442,850	453,558	539,209	442,850	453,558
Current liabilities	23,442	137,097	140,804	23,442	137,097	140,804
	562,651	579,947	594,362	562,651	579,947	594,362
At 1 April 2019	579,947	594,362	589,980	579,947	594,362	589,980
Received during the year	591,565	582,380	493,578	591,565	582,380	493,578
Released to the statement of comprehensive income	(601,189)	(600,964)	(525,462)	(600,087)	(596,991)	(525,462)
Other movements (Note 1)	(7,672)	4,169	36,266	(8,774)	196	36,266
At 31 March 2019	562,651	579,947	594,362	562,651	579,947	594,362

(Note 1) Other movements - represent the utilisation of other grants that were received in the previous year, but utilised in the current year. These other grants mainly from the government and relate to capital expenditures.

Refer to note 42 and 43 for nature and detail of the government grant received relating to decommissioning and decontamination costs.



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20. PROVISIONS

Reconciliation of provisions - Group - 2019

	Opening balance	Additions	Utilised during the year	Reversed during the year	Total
	R '000	R '000	R '000	R '000	R '000
Decommissioning and waste disposal	511,580	114,856	(1,789)	(45,162)	579,485
Employee benefit accruals	91,904	58,170	(61,763)	(3,450)	84,861
Provision for loss on contracts	-	420	-	-	420
Provision for gratuities	-	9,018	(8,389)	(629)	-
After-reactor management cycle	6,355	590	-	(1,825)	5,120
	609,839	183,054	(71,941)	(51,066)	669,886

Reconciliation of provisions - Group - 2018

	Opening balance	Additions	Utilised during the year	Reversed during the year	Change in discount factor	Total
	R '000	R '000	R '000	R '000	R '000	R '000
Decommissioning and waste disposal	226,048	336,556	(60,368)	11,770	(2,426)	511,580
Legal proceedings	33,232	-	(9,428)	(23,804)	-	-
Employee benefit accruals	100,861	72,526	(83,558)	2,076	(1)	91,904
Provision for loss on contracts	-	3,294	(3,294)	-	-	-
Provision for gratuities	669	-	(669)	-	-	-
After-reactor management cycle	1,676	2,854	-	1,825	-	6,355
	362,486	415,230	(157,317)	(8,133)	(2,427)	609,839

Reconciliation of provisions - Group - 2017

	Opening balance	Additions	Utilised during the year	Reversed during the year	Change in discount factor	Total
	R '000	R '000	R '000	R '000	R '000	R '000
Decommissioning and waste disposal	205,100	71,972	(49,656)	1,058	(2,426)	226,048
Legal proceedings	-	33,232	-	-	-	33,232
Employee benefit accruals	96,296	79,565	(71,848)	-	-	104,013
Provision for loss on contracts	697	(697)	-	-	-	-
Provision for gratuities	669	-	-	-	-	669
After-reactor management cycle	1,427	3,012	(1,087)	-	-	3,352
	304,189	187,084	(122,591)	1,058	(2,426)	367,314

Reconciliation of provisions - Company - 2019

	Opening balance	Additions	Utilised during the year	Reversed during the year	Change in discount factor	Total
	R '000	R '000	R '000	R '000	R '000	R '000
Decommissioning and waste disposal	424,005	52,473	(12,105)	-	-	464,373
Employee benefit accruals	51,023	37,745	(31,572)	-	-	57,196
After-reactor management cycle	4,530	590	-	-	-	5,120
	479,558	90,808	(43,677)	-	-	526,689

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20. PROVISIONS (CONTINUED)

Reconciliation of provisions - Company - 2018

	Opening balance	Additions	Utilised during the year	Reversed during the year	Change in discount factor	Total
	R '000	R '000	R '000	R '000	R '000	R '000
Decommissioning and waste disposal	380,169	40,941	-	-	2,895	424,005
Employee benefit accruals	45,894	33,772	(28,012)	-	(631)	51,023
After-reactor management cycle	1,676	2,854	-	-	-	4,530
	427,739	77,567	(28,012)	-	2,264	479,558

Reconciliation of provisions - Company - 2017

	Opening balance	Additions	Utilised during the year	Total
	R '000	R '000	R '000	R '000
Decommissioning and waste disposal	313,888	66,281	-	380,169
Employee benefit accruals	43,503	29,905	(27,514)	45,894
Provision for loss on contracts	697	(697)	-	-
After-reactor management cycle	-	1,676	-	1,676
	358,088	97,165	(27,514)	427,739

Non-current liabilities	571,949	516,110	228,393	469,493	428,535	381,845
Current liabilities	97,937	93,729	138,921	57,196	51,023	45,894
	669,886	609,839	367,314	526,689	479,558	427,739

Provision for decommissioning and waste disposal:

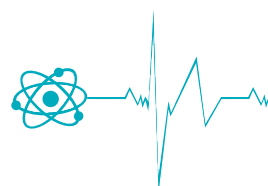
Provision is made for the decommissioning of purely commercial plants and disposal of the resulting waste. The annual transfer is based on the latest available cost information. The Company was awarded a license from the National Nuclear Regulator to transport the waste to Vaalputs on 15 March 2011. The assessment methodology provides an estimate of the total cost associated with the decommissioning of commercial plants currently existing at Necsa to the point where they can be reused or released from regulatory control, and the total cost to manage (treat, condition, store and/or dispose) all the existing and future waste created by these activities. In order to estimate the cost and scheduling of the various decommissioning and waste management activities the following assumptions were made:

- In view of the fact that the Necsa site will remain a licensed site for the foreseeable future, the decommissioning of facilities to the point of release from regulatory control is not necessarily regarded as the required endpoint, as that may depend on the potential future re-use of the nuclear facility.
- Only liabilities associated with existing facilities identified during the assessment cycle, and future facilities identified as essential for the discharge of these liabilities are included in the assessment.
- The following costs are included in the assessment:

The cost to decommission all facilities to the point where they can be released from regulatory control (The cost exclude future demolishing cost of buildings). Rehabilitation of the site was not included in the assessment, except in cases where this was considered to be the most viable option to achieve release from regulatory control.

A potential benefit (cost decrease) may be achieved as a result of technological progress in the fields of decommissioning and waste management. There are, however, many uncertainties that may impact the accuracy of cost estimates for discharging nuclear liabilities, mainly due to the long time periods over which the cost estimates must be done. Some of these uncertainties are listed below:

Non-technical aspects, such as socio-political factors and changes in laws or regulations in nuclear safety and waste management, are difficult to quantify in terms of impact on cost estimates.



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20. PROVISIONS (CONTINUED)

Decommissioning cost for many projects occur some years in the future. The lifetime of some processes may also be extended resulting in the postponement of decommissioning activities and cost.

Future developments in the nuclear industry (up scaling or down scaling) may result in the reuse of contaminated or previously decommissioned facilities. Refer note 41 and 43 for further disclosure on the nature of Decommissioning and decontaminating liability.

Accrual for employee benefits:

The cost of leave days due to employees as well as thirteenth cheque's payable has been accrued for. The accrual will be realised during the following year.

General:

It is envisaged that, based on the current information available, any additional liability in excess of the amounts provided will not have a material adverse effect on the Group's financial position, liquidity or cash flow.

The effect of time value of money has been omitted when calculating provisions where the effect was immaterial.

Investment contributions for future liabilities were previously included in provisions, these have been reclassified to Investment contributions for future liabilities, on the face of the statement of financial position and therefore prior year provision figures have changed. Please refer to note 43. This represents contributions invested or ring fenced for the future decommissioning of facilities.

21. TRADE AND OTHER PAYABLES

Financial Instruments

Trade payables	344,282	262,615	85,313	16,881	40,422	53,036
Amounts received in advance	3,531	3,844	(112,419)	7	2	(4)
Other payables 1	35,733	31,730	-	-	-	-
Funds held on behalf of NRWDI	-	-	488	-	-	(1)
Accrued expenses	102,040	126,262	42,307	11,406	8,724	19,837
Accrued expense 2	-	68	931	-	-	-
Deposits received	-	-	5,424	-	-	-
Other payables	12,294	40,796	18,669	15,771	43,461	31,866
VAT	5,899	962	40,478	5,696	864	22,346
	503,779	466,277	81,191	49,761	93,473	127,080

Fair value of trade and other payables

Trade and other payables	503,779	466,277	81,191	49,761	93,473	127,080
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Trade and other payables are initially measured at fair value and are subsequently measured at amortised cost using the effective interest rate method.

Trade creditors have been reviewed on an individual basis and where extended payment terms were applicable the effect of the time value of money have been taken into account. This was done to determine the finance portion included. The carrying value of Trade and other payables are increased by an interest income of R 1 004 (2018: R931) (2017: R407) to discount the carrying value to amortised cost for the Company and an interest charge of R 7 676 (2018: R8 350) (2017: R6 408) for the Group.

The average credit period on purchases is between 30 and 60 days from date of statement. The Company and Group settle payments to creditors on average 30 days from receipt of the statements. Interest is sometimes charged on trade payables based on the payment policy of the Group. The Company and Group has financial risk management policies in place to ensure that all payables are paid within the credit timeframe.

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22. FINANCIAL ASSETS BY CATEGORY

The accounting policies for financial instruments have been applied to the line items below:

Group - 2019

	Loans and receivables	Available-for- sale	Total
	R '000	R '000	R '000
Loans to (from) group companies	(1)	-	(1)
Other financial assets	711,107	195,391	906,498
Cash and cash equivalents	370,868	-	370,868
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	562,769	-	562,769
	1,644,743	195,391	1,840,134

Group - 2018

	Loans and receivables	Total
	R '000	R '000
Loans to (from) group companies	3,310	3,310

Company - 2019

	Loans and receivables	Available-for- sale	Total
	R '000	R '000	R '000
Loans to (from) group companies	(42,532)	-	(42,532)
Other financial assets	709,368	195,355	904,723
Cash and cash equivalents	16,717	-	16,717
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	304,466	-	304,466
	988,019	195,355	1,183,374

Company - 2018

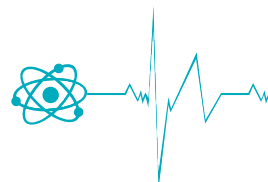
	Loans and receivables	Available-for- sale	Total
	R '000	R '000	R '000
Loans to (from) group companies	(58,969)	-	(58,969)
Other financial assets	313,207	409,815	723,022
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	116,953	-	116,953
	371,191	409,815	781,006

23. FINANCIAL LIABILITIES BY CATEGORY

The accounting policies for financial instruments have been applied to the line items below:

Group - 2019

	Financial liabilities at amortised cost	Total
	R '000	R '000
Other financial liabilities	4,408	4,408
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	503,780	503,780
Bank overdraft	45,959	45,959
	554,147	554,147



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23. FINANCIAL LIABILITIES BY CATEGORY (CONTINUED)

Group - 2018

	Financial liabilities at amortised cost	Total
	R '000	R '000
Loans from minority shareholders	1	1
Other financial liabilities	13,851	13,851
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	466,277	466,277
Bank overdraft	32,000	32,000
	512,129	512,129

Company - 2019

	Financial liabilities at amortised cost	Total
	R '000	R '000
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	49,754	49,754
Bank overdraft	20,000	20,000
	69,754	69,754

Company - 2018

	Financial liabilities at amortised cost	Total
	R '000	R '000
Other financial liabilities	5,949	5,949
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	93,471	93,471
Bank overdraft	5,000	5,000
	104,420	104,420

24. REVALUATION RESERVE

The revaluation reserve consists of fair value adjustments to the land and buildings of the Company and Group.

Fair value adjustment to land and buildings	633,294	560,210	508,456	593,963	527,791	477,405
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Necsa does not intend to sell their land and buildings before decommissioning and decontamination takes place. An exercise will need to be conducted to check the decommissioning and decontamination of the land and buildings. Refer to note 31 on further disclosure on the revaluation reserve.

25. FAIR VALUE ADJUSTMENT ASSETS-AVAILABLE-FOR-SALE RESERVE

The fair value adjustment assets-available-for-sale-reserve comprises all fair value adjustments on available for sale financial instruments. When an asset or liability is derecognised, the fair value adjustment relating to that asset or liability is transferred to profit or loss.

Available for sale financial instruments	(793,151)	98,621	(194,763)	7,716	7,052	5,807
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26. REVENUE

	Group			Company		
	2019	2018	2017	2019	2018	2017
	R '000	R '000	R '000	R '000	R '000	R '000
Sale of goods	1,468,454	1,815,147	1,619,679	402,412	388,072	400,652
Rendering of services	19,130	-	-	-	-	-
Construction contracts	-	34,499	6,445	-	34,499	6,445
Government grants	601,189	600,964	525,462	600,087	596,991	525,462
Other grants	15,070	56,669	53,924	27,772	71,198	22,718
Miscellaneous other revenue	-	-	(16,150)	-	-	-
	2,103,843	2,507,279	2,189,360	1,030,271	1,090,760	955,277

The amount included in revenue arising from government grants is as follows:

Operating activities	493,469	495,711	446,046	492,367	491,737	446,046
Decommissioning of strategic plants	77,165	73,473	61,691	77,165	73,474	61,691
LEU Fuel and conversion	19,967	21,344	8,418	19,967	21,344	8,418
Security	9,851	9,394	8,372	9,851	9,394	8,372
Deferred R&D Safari Grant Used	49	276	169	49	276	169
Deferred MTEF Grant utilised for Activities	688	766	766	688	766	766
	601,189	600,964	525,462	600,087	596,991	525,462

The government grant relating to operating activities is primarily utilised to fund research and development expenses, non-commercial overheads and supplementary activities as required by the Nuclear Energy Act, costs for discarding radioactive waste and for storage of irradiated nuclear fuel.

The South African Government has an obligation to discharge nuclear liabilities resulting from previous strategic nuclear programme's which includes decommissioning and decontamination of disused historic facilities. The Minister of Department of Energy is charged with this responsibility on behalf of government. A Nuclear Liabilities Management Plan (NLMP) was approved by cabinet in February 2007.

Necsa, as a statutory body created in terms of the Nuclear Energy Act (Act 46 of 1999) has been delegated with certain responsibilities in this regard. It annually receives funds to apply to the decommissioning and decontamination process in terms of the NLMP. Funds received by Necsa for this purpose and not utilised at year end are accounted for as deferred grants.

27. OPERATING PROFIT (LOSS)

Operating (loss) profit for the year is stated after charging (crediting) the following, amongst others:

Income from subsidiaries (other than investment income)

Dividends	-	-	1	20,000	106,982	61,074
Interest	884	6	1,499	-	-	-
	884	6	1,500	20,000	106,982	61,074



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27. OPERATING PROFIT (LOSS) (CONTINUED)

Leases						
Operating lease charges						
Premises	417	468	1,946	164	150	138
Equipment	3,613	3,500	3,713	3,364	3,373	3,600
Lease rentals	45,944	45,303	47,423	45,900	45,037	42,481
	49,974	49,271	53,082	49,428	48,560	46,219
Contingent rentals on operating leases						
Operating lease 1	(63)	5,494	-	-	-	-
Operating lease other	22	-	-	-	-	-
	(41)	5,494	-	-	-	-
Total operating lease charges	49,933	54,765	53,082	49,428	48,560	46,219
Less: Operating lease charges included in cost of merchandise sold and inventories	(196)	(5,494)	-	-	-	-
Total operating lease charges expensed	49,737	49,271	53,082	49,428	48,560	46,219
Auditor's remuneration - external						
Audit fees	4,571	8,029	11,357	16	5,824	5,353
Auditor's remuneration - internal	663	343	341	-	-	-
Other						
Loss on sale of property, plant and equipment	1,766	19,477	(1,464)	(38)	18,002	(84)
Profit on sale of other financial assets	4,156	-	57	4,156	-	57
Reversal of impairment on property, plant and equipment	-	(16)	-	-	-	-
Impairment of subsidiary	3,389	-	-	-	-	-
Impairment on loans to group companies	-	1,087	1,809	-	-	-
Profit/(Loss) on exchange differences	190	-	-	-	-	-
Depreciation on property, plant and equipment	85,437	97,530	81,371	58,697	70,191	64,097
Employee costs	1,085,250	985,583	875,171	777,489	731,506	682,372
Consulting and professional fees	64,882	54,622	(95,500)	38,532	30,315	25,723
Impairment of inventory	18,706	12,216	21,241	3,448	2,682	1,694
Repairs and maintenance	1,523	(296)	4,480	-	-	-
Research and development costs	3,520	1,532	7,119	-	-	-
Amortisation of Intangible assets	5,702	5,316	207	-	-	-
Depreciation and amortisation						
Depreciation of property, plant and equipment	85,437	97,530	81,371	58,697	70,191	64,097
Amortisation of intangible assets	5,702	5,316	207	-	-	-
Total depreciation and amortisation	91,139	100,754	81,767	58,697	64,446	64,097
Less: Depreciation included in cost of merchandise sold and inventories	(17,418)	(21,778)	(12,673)	-	-	-
Total depreciation and amortisation expensed	73,721	78,976	69,094	58,697	64,446	64,097



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28. INVESTMENT INCOME

Dividend income

Subsidiaries - Local	-	-	-	20,000	106,982	61,074
Associates - Foreign	-	-	14	-	-	-
Unlisted investments - Local	814	-	-	-	-	-
Listed investments - Available for sale	489	235	838	489	234	-
Total dividend income	1,303	235	852	20,489	107,216	61,074

Interest income

From investments in financial assets:

Bank	76,024	96,741	87,434	34,743	37,577	42,020
Interest charged on trade and other receivables	5,190	750	146	5,081	630	-
Fair value adjustments	8,063	22,717	27,942	5,671	5,647	8,354
Interest received from SARS	(2,538)	(13,388)	-	-	-	-
Stage 1 decommissioning and decontamination	228,855	213,589	202,570	228,097	213,589	202,472
Impaired financial assets	-	-	-	-	-	-

From loans to group and other related parties:

Subsidiaries	884	6	1,499	-	-	-
Joint ventures	5,929	-	-	-	-	-
Associates	-	869	805	-	-	-

Total interest income	322,407	321,284	320,396	273,592	257,443	252,846
Total investment income	323,710	321,519	321,248	294,081	364,659	313,920

This relates to imputed interest on debtors accounts.

This relates to interest charged on the Decommissioning & decontamination asset refer to note 41.

Rental income

Finance lease contingent rental income	-	-	-	-	-	-
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Operating lease rental income

Investment property	6,588	50,991	5,467	4,719	49,661	4,597
Contingent rental income	-	-	-	-	-	-
Total operating lease rental income	6,588	50,991	5,467	4,719	49,661	4,597

Necsa is a lessor in terms of an operating lease for buildings.

Necsa has no contingent rental.

29. FINANCE COSTS

Group	3,381	16,171	425	3,381	581	-
Non-current borrowings	-	2	3	-	-	-
Trade and other payables	41	18	3,399	-	13	-
Finance leases	513	514	718	361	423	478
Bank overdraft	7,523	3,769	1,574	1,300	524	3,028
Interest expensed	270,487	252,998	236,541	270,487	252,998	237,006
Amortisation of held to maturity liabilities	1,215	-	1,011	-	-	-
Fair value adjustments (1)	3,608	4,818	15,499	3,633	1,959	3,135
Total finance costs	286,768	278,290	259,170	279,162	256,498	243,647

Necsa did not capitalise borrowing costs in the current or prior year presented.

(1) Fair value adjustments relate to imputed interest.



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30. TAXATION

Major components of the tax (income) expense

Current

Local income tax - current period	(55,234)	34,042	96,141	-	-	-
Local income tax - recognised in current tax for prior periods	74	-	-	-	-	-
Current tax 1	-	46	(43)	-	-	-
	(55,160)	34,088	96,098	-	-	-

Deferred

Originating and reversing temporary differences	(247)	3,654	505	-	-	-
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Current

Local income tax - current period	(807)	23,461	101,993	-	-	-
Local income tax - recognised in current tax for prior periods	(7)	(90)	(1,737)	-	-	-
Deferred tax - current year	(59,227)	10,694	(4,746)	-	-	-
Foreign income tax for current year	4,298	3,677	83	-	-	-
Originating from reversing temporary differences	-	-	1,005	-	-	-
Capital Gains Tax	336	-	5	-	-	-
	(55,407)	37,742	96,603	-	-	-

Reconciliation of the tax expense

Reconciliation between applicable tax rate and average effective tax rate.

Applicable tax rate	28.00 %	28.00 %	28.00 %	28.00 %	28.00 %	28.00 %
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The South African Revenue Services has approved an exemption in respect of The South African Nuclear Energy Corporation SOC Limited under section 10(1)(cA)(i) of the Income Tax Act subject to certain conditions. No provision is therefore made for tax for Necsa Company

31. OTHER COMPREHENSIVE INCOME

Components of other comprehensive income - Group - 2019

	Gross R '000	Tax R '000	Net R '000
Items that will not be reclassified to profit (loss)			
Remeasurements on net defined benefit liability/asset			
Remeasurements on net defined benefit liability/asset	37,926	-	37,926
Movements on revaluation			
Gains (losses) on property revaluation	73,084	-	73,084
Total items that will not be reclassified to profit (loss)	111,010	-	111,010
Items that may be reclassified to profit (loss)			
Available-for-sale financial assets adjustments			
Gains (losses) arising during the year	658	-	658
Total	111,668	-	111,668

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31. OTHER COMPREHENSIVE INCOME (CONTINUED)

Components of other comprehensive income - Group - 2018

	Gross R '000	Tax R '000	Net R '000
Items that will not be reclassified to profit (loss)			
Remeasurements on net defined benefit liability/asset			
Remeasurements on net defined benefit liability/asset	561	-	561
Movements on revaluation			
Gains (losses) on property revaluation	51,754	-	51,754
Total items that will not be reclassified to profit (loss)	52,315	-	52,315
Items that may be reclassified to profit (loss)			
Available-for-sale financial assets adjustments			
Gains (losses) arising during the year	1,245	-	1,245
Total	53,560	-	53,560

Components of other comprehensive income - Group - 2017

	Gross R '000	Tax R '000	Share of other comprehensive income of associates R '000	Net R '000
Items that will not be reclassified to profit (loss)				
Remeasurements on net defined benefit liability/asset				
Remeasurements on net defined benefit liability/asset	19,191	-	-	19,191
Movements on revaluation				
Gains (losses) on property revaluation	28,891	-	-	28,891
Total items that will not be reclassified to profit (loss)	48,082	-	-	48,082
Items that may be reclassified to profit (loss)				
Exchange differences on translating foreign operations				
Exchange differences arising during the year	21,689	-	-	21,689
Available-for-sale financial assets adjustments				
Gains (losses) arising during the year	1,388	-	(47)	1,341
Total items that may be reclassified to profit (loss)	23,077	-	(47)	23,030
Total	71,159	-	(47)	71,112



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31. OTHER COMPREHENSIVE INCOME (CONTINUED)

Components of other comprehensive income - Company - 2019

	Gross R '000	Tax R '000	Net R '000
Items that will not be reclassified to profit (loss)			
Remeasurements on net defined benefit liability/asset			
Remeasurements on net defined benefit liability/asset	37,926	-	37,926
Movements on revaluation			
Gains (losses) on property revaluation	66,172	-	66,172
Total items that will not be reclassified to profit (loss)	104,098	-	104,098
Items that may be reclassified to profit (loss)			
Available-for-sale financial assets adjustments			
Effect of tax rate changes	664	-	664
Total	104,762	-	104,762

Components of other comprehensive income - Company - 2018

	Gross R '000	Tax R '000	Net R '000
Items that will not be reclassified to profit (loss)			
Movements on revaluation			
Gains (losses) on property revaluation	50,386	-	50,386
Items that may be reclassified to profit (loss)			
Available-for-sale financial assets adjustments			
Effect of tax rate changes	1,245	-	1,245
Total	51,631	-	51,631

Revaluation reserve

The properties revaluation reserve arises on the revaluation of land and buildings. When revalued land or buildings are sold, the portion of the properties revaluation reserve that relates to that asset is transferred directly to retained earnings. Items of other comprehensive income included in the properties revaluation reserve will not be reclassified subsequently to profit or loss. Necsa does not intend to sell the land and buildings before the decommissioning and decontamination takes place. An exercise will need to be conducted in order to ensure that the decommissioning and decontamination takes place. Necsa shareholders will not distribute the revaluation reserve to shareholders.

Foreign currency translation reserve

Exchange differences relating to the translation of the results and net assets of the Group's foreign operations from their functional currencies to the Group's presentation currency (i.e. Currency Units) are recognised directly in other comprehensive income and accumulated in the foreign currency translation reserve. Gains and losses on hedging instruments that are designated as hedging instruments for hedges of net investments in foreign operations are included in the foreign currency translation reserve. Exchange differences previously accumulated in the foreign currency translation reserve (in respect of translating both the net assets of foreign operations and hedges of foreign operations) are reclassified to profit or loss on the disposal of the foreign operation.

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31. OTHER COMPREHENSIVE INCOME (CONTINUED)

Available for sale financial assets and liabilities

Listed redeemable notes held by the Group that are traded in an active market are classified as available-for-sale and are stated at fair value at the end of each reporting period. Changes in the carrying amount of available-for-sale monetary financial assets relating to changes in foreign currency rates, interest income calculated using the effective interest method and dividends on available-for-sale equity investments are recognised in profit or loss. Other changes in the carrying amount of available-for-sale financial assets are recognised in other comprehensive income and accumulated under the heading of investments revaluation reserve. When the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously accumulated in the investments revaluation reserve is reclassified to profit or loss.

32. CASH (USED IN) GENERATED FROM OPERATIONS

(Loss) profit before taxation	(201,660)	(69,205)	67,545	89,878	(196,679)	(124,789)
Adjustments for:						
Depreciation	85,437	85,489	81,560	58,697	70,191	64,097
Amortisation	5,702	207	207	-	-	-
Profit/ (Loss) on sale of assets	(257)	(19,477)	-	38	(18,002)	84
Profit/(Loss) on sale of other financial assets	(4,156)	-	-	(4,156)	-	(57)
Losses (gains) on foreign exchange	6,493	(11,112)	10,001	(2,675)	6,174	7,078
Income from equity accounted investments	(514)	-	-	-	-	-
Dividend income	(1,303)	(235)	(853)	(20,489)	(107,216)	(61,074)
Interest income	(325,788)	(321,284)	(320,396)	(273,592)	(257,443)	(252,846)
Finance costs	286,768	278,290	259,170	279,162	256,498	243,647
Fair value (gains) losses	(3,022)	38,699	(2,919)	(9,330)	27,928	(5,883)
Impairment losses and reversals	1,330	1,330	1,330	-	-	-
Movements in retirement benefit assets and liabilities	(1,117)	(16,600)	(13,445)	2,636	726	(14,005)
Bad debts written off	2,714	1,735	11,231	-	-	-
Amortisation: Decommissioning and decontamination	13,174	14,425	9,659	12,746	14,170	9,569
Movements in provisions	60,047	242,525	63,125	47,131	51,819	69,651
Discontinued operations	(1,168)	(41)	130	-	-	-
Other non-cash flow movements	(1,082,589)	663,031	(298,888)	(365,984)	(73,177)	(193,176)
Imputed interest - debtors	-	(8,769)	(5,471)	-	-	(2,461)
Imputed interest - creditors	-	7,676	8,350	-	-	931
Fair value adjustments on other financial assets	(599)	(1,303)	(1,325)	(599)	(1,303)	(1,325)
Impairment loss	-	82,801	-	-	82,801	-
Impairment loss on of subsidiary	-	-	-	-	42,001	-
Movements in investment contributions for future liabilities	-	2,632	2,604	-	2,632	2,604
Loss on disposal of subsidiary	-	-	17,981	-	-	-
Changes in working capital:						
Inventories	(26,217)	(44,246)	(6,178)	24,726	(43,350)	16,726
Trade and other receivables	54,857	(263,243)	108,937	29,594	24,549	38,542
Prepayments	51,623	(50,904)	113,901	49,973	(55,928)	55,730
Trade and other payables	37,502	368,869	(83,985)	(43,712)	(27,785)	(12,528)
Deferred income	-	-	207	-	-	-
Other liability 1	-	-	1,407	-	-	-
Amounts received in advance	(99,277)	148,184	(29,705)	(20,949)	115,842	3,197
Deposits received	-	3,880	3,880	-	-	-
	(1,142,020)	1,133,354	(2,147)	(146,905)	(85,552)	(156,288)

33. TAX REFUNDED (PAID)

Balance at beginning of the year	25,790	9,633	7,476	-	-	-
Current tax for the year recognised in profit or loss	55,160	(34,088)	(96,098)	-	-	-
Movement in deferred tax	(60,585)	(1,103)	(3,799)	-	-	-
Balance at end of the year	(15,429)	(25,790)	(9,633)	-	-	-
	4,936	(51,348)	(102,054)	-	-	-



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Group			Company		
2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

34. COMMITMENTS

Authorised capital expenditure

Already contracted for but not provided for

• Property, plant and equipment	24,356	35,290	14,978	14,617	13,096	6,593
• Intangible assets	19	106	-	-	-	-

This committed expenditure relates to plant and equipment and will be financed through ordinary trading operations.

Operating leases – as lessee (expense)

Minimum lease payments due

• within one year	9,746	7,355	13,185	3,513	1,662	9,398
• in second to fifth year inclusive	30,830	25,204	78,273	3,812	221	65,065
	40,576	32,559	91,458	7,325	1,883	74,463

Operating lease payments represent rentals payable by the Group for certain of its motor vehicles and electronic office equipment. Leases are negotiated for an average term of 3.0 years (2018: 3.0 years).

35. CONTINGENCIES

By their nature, contingencies will only be resolved when one or more future events occur or fail to occur. The assessment of such contingencies inherently involve the exercise of significant judgement and estimates of the outcome of future events.

Litigation and other judicial proceedings as a rule raise difficult and complex legal issues and are subject to uncertainties and complexities including, but not limited to, the facts and circumstances of each particular case, issues regarding the jurisdiction in which each suit is brought and differences in applicable law. Upon resolution of any pending legal matter, the Company may be forced to incur charges in excess of the presently established provisions and related insurance coverage. It is possible that the financial position, results of operations or cash flows of the Company could be materially affected by the unfavourable outcome of litigation.

Guarantees:

Guarantees of R866 (2018: R866) were issued to financial institutions as collateral security for housing loans granted by financial institutions to employees.

Guarantees of R1,518 (2018: R 1,390) were issued by Nedbank on behalf of NTP Logistics SOC Limited in favour of suppliers. The guarantee were issued in favour of specific suppliers as required through negotiations or industry requirements.

Legal claims:

Possible quantifiable legal obligations exist for the Group totaling an estimated R27,437 (2018: R20,255) in connection with disputes with delivery of goods, arrear rentals receivable, unfair labour practice, CCMA disputes and services rendered. These cases are currently being investigated by the Necsa Legal division.

Suretyship:

A limited deed of suretyship for an amount of up to R20, 000 (2018: R20, 000) has been given to Pelchem SOC Limited for a Nedbank facility. R14, 000 (2018: R14, 000) relates to an overnight facility and R6, 000 (2018: R6, 000) to an asset based finance.

A material uncertainty exists on whether a subsidiary, Gammatec Middle East General Trading LLC, would be able to meet its obligations as they fall due, as this subsidiary's liabilities exceed its fairly valued assets at the end of the reporting period. Gammatec NDT Supplies SOC Limited as a 76% shareholder of Gammatec Middle East General Trading LLC, has given a letter of support to the management and auditors of Gammatec Middle East General Trading LLC that it will provide an appropriate level of financial support to ensure that Gammatec Middle East general trading LLC is in a position to meet its financial liabilities and obligations as and when they fall due for at least a period of 18 months. The Gammatec Middle East General Trading LLC liabilities exceeded its assets with R9,129 at 31 March 2019.

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35. CONTINGENCIES (CONTINUED)

NTP Radioisotopes SOC Limited

In May 2018, NTP Radioisotopes SOC Limited, a 100% owned subsidiary of Necsa, signed a R30 million guarantee in favour of the IDC for a loan granted to Pelchem SOC Limited, on condition that the current letter of support issued to Pelchem be withdrawn. Pelchem is a 100% owned subsidiary of Necsa SOC Limited. On 25 May 2018 the board of NTP Radioisotopes SOC Limited approved a guarantee of R 20 million in favour of the Nedbank for the overdraft granted to Pelchem SOC Limited. The letter of support and the approval for issuing of both guarantees expired.

An extraordinary shareholders meeting of NTP Radioisotopes Europe SA was held 31 August 2017 wherein a decision regarding the dissolution of NTP Radioisotopes Europe SA was taken. The liquidator in his report of 20 March 2018 has indicated that NTP undertook to cover liabilities up to an amount of EUR 733,500 of which EUR 171,107 has been paid to date. The liquidation process is ongoing.

36. RELATED PARTIES

Relationships

Holding entity	Department of Energy
Subsidiaries	Refer to note 6
Associates	Refer to note 7
National government	All national government departments are regarded to be related parties in accordance with circular 4 of 2005: Guidance on the term "State controlled entities" in the context of IAS 24 - Related Parties, issued by the South African Institute of Chartered Accountants. No transactions are implied simply by the nature of existence of the relationship between entities. All directors have given general declarations of interest in terms of the Companies Act.
Directors and members of key management	Details of directors and key management remuneration paid are disclosed in note 37

The following is a summary of transactions with related parties during the year and balances due at year end

National public entities

Services rendered	4,584	4,259	1,077	4,792	4,185	1,077
Services received	48,910	47,994	(40,423)	48,910	47,993	(40,423)
Trade amount due (to)/ from	5,146	(8,127)	(10,157)	5,355	(8,127)	(10,100)

National Government Departments

Services rendered	593,664	582,986	525,735	593,664	582,986	525,735
Trade amount due (to)/ from	-	433	-	-	433	-

Subsidiaries

Services rendered	-	-	-	-	-	374,508
Services received	-	-	-	-	-	(4,152)
Dividends income	-	-	-	-	-	61,074
Loans to (from) subsidiaries	-	-	-	-	-	756
Trade amount due (to)/ from	-	-	-	-	-	150,230

Associates

Services rendered	3,026	2,983	2,606	-	-	-
Services received	15,875	10,921	(10,180)	-	-	-
Loans to/from associates	-	3,310	3,310	-	-	-
Trade amount due (to)/ from	2,657	808	1,760	-	-	-

Compensation to directors and other key management

Short-term employee benefits	33,399	137,746	69,923	2,028	2,669	1,413
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Necsa paid an amount of R25 000 per month to Dr KR Kemm (Chairperson of Necsa's Board) until his removal in December 2018.



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36. RELATED PARTIES (CONTINUED)

Trade amount due to/from subsidiaries are gross values reflected prior to provisions for bad debts.

A provision for bad debts relating to Pelchem was raised R 164.7 million (2018 R107,2 million; 2017 R64.9 million).

Trade debtors (Gammatec and NTP) have payment terms of 60 days. Pelchem trade debtors have payment terms of 120 days. The remaining accounts have payment terms of 30 days.

37. DIRECTORS' AND PRESCRIBED OFFICER'S EMOLUMENTS

Group Executives

2019

	Taxable allowance	Retirement fund contributions	Other company contribution	Salary	Total
	R '000	R '000	R '000	R '000	R '000
Mr MU Ramatsui	650	290	27	1,382	2,349
Mr HJ Viljoen	229	46	14	839	1,128
Mr MA Rasweswe	488	300	26	1,429	2,243
Mr TJ Tselane	968	317	32	1,508	2,825
Ms HNB Khumalo	208	475	28	1,849	2,560
Mr BM Mphahlele	654	220	23	1,047	1,944
Mr MA Mondli	322	317	25	1,471	2,135
	3,519	1,965	175	9,525	15,184

2018

	Taxable allowance	Retirement fund contributions	Other company contribution	Salary	Separation Package IRP3	Total
	R '000	R '000	R '000	R '000	R '000	R '000
Mr MU Ramatsui	613	269	25	1,280	-	2,187
Mr MS Maserumule	660	87	26	415	1,282	2,470
Mr ZG Myeza	404	183	26	588	1,136	2,337
Mr MA Rasweswe	463	283	24	1,349	-	2,119
Mr TJ Tselane	649	284	26	1,353	-	2,312
Ms HNB Khumalo	202	425	25	1,656	-	2,308
Mr BM Mphahlele	547	229	22	1,092	-	1,890
Mr MA Mondli	286	343	22	1,355	-	2,006
	3,824	2,103	196	9,088	2,418	17,629

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37. DIRECTORS' AND PRESCRIBED OFFICER'S EMOLUMENTS (CONTINUED)

Non-executive

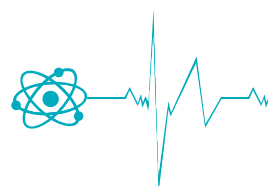
2019

	Directors' fees	Company Contributions	Other fees	Total
	R '000	R '000	R '000	R '000
Ms P Bosman	290	3	-	293
Dr GJ Davids	215	3	-	218
Dr KR Kemm	240	2	2	244
MS PN Kingston	30	-	-	30
Dr NT Magau	215	3	-	218
Dr R Masango	22	-	-	22
*Mr AN Mhlongo	52	-	-	52
Dr PE Molokwane	22	-	-	22
Mrs RP Mosia	182	2	-	184
MR JP Ndhlovu	22	-	-	22
Mr ENN Ngcobo	-	-	3	3
Mr ZC Ngidi	233	3	-	236
Ms MV Ngwenya	22	-	-	22
Mr A Patel	22	-	2	24
Mr MS Sekgota	182	2	-	184
Mr B Singh	-	-	2	2
Mr MPK Tshivhase	214	3	-	217
Prof Z Vilakazi	44	-	-	44
	2,007	21	9	2,037

2018

	Directors' fees	Company Contributions	Other fees	Total
	R '000	R '000	R '000	R '000
Dr NT Magau	317	4	-	321
*Mr AN Mhlongo	75	1	-	76
Dr KR Kemm (Chairperson)	354	4	14	372
Mrs RP Mosia	269	3	-	272
Mr ENN Ngcobo	-	-	5	5
Ms P Bosman	301	3	-	304
Mr ZC Ngidi	344	4	-	348
Mr MPK Tshivhase	317	4	-	321
Mr MS Sekgota	269	3	-	272
Dr GJ Davids	317	4	-	321
Prof Z Vilakazi	75	1	-	76
	2,638	31	19	2,688

* Mr N.A. Mhlongo (Co-opted Chair of Audit Risk Committee of NTP Radioisotopes, a Necsa Subsidiary), not Necsa Board member



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37. DIRECTORS' AND PRESCRIBED OFFICER'S EMOLUMENTS (CONTINUED)

Executive Director

2019

	Taxable allowance	Other company contributions	Salary	Total
	R '000	R '000	R '000	R '000
Tshelane GP	1,704	49	2,492	4,245
Mr DG Robertson	36	12	1,035	1,083
	1,740	61	3,527	5,328

2018

	Taxable allowance	Retirement Fund Contribution	Other company contributions	Salary	Total
	R '000	R '000	R '000	R '000	R '000
Tshelane GP	1,486	196	47	2,380	4,109

Details of service contracts

No director has a notice period in excess of one year and no director's contract makes provision for predetermined compensation on termination exceeding one year's salary and benefits in kind. No directors are proposed for election or re-election at the forthcoming annual general meeting. All the directors have a service contract.

38. PRIOR PERIOD ERRORS

Intercompany dividends of R 12 963 million from NTP Radioisotopes (NTPR) were incorrectly eliminated in the prior year which resulted in consolidated dividend income reflected in the annual financial statements. The correction was effected in the current year against the Distributable Reserves that the NTPR uses to pay out dividends.

The prior year Statements of Changes in Equity has been restated to correctly reflect the Non-Controlling Interest, Foreign Currency Translation Reserve and Retained Earnings. There has been no Changes to Assets, Liabilities and Profit and Loss of the current or prior period.

The errors have been corrected retrospectively and resulted in adjustments as follows:

As a backdrop, emanating from various outstanding matters such as approval of conversion of the Pelchem Trade Debt to Equity, Necsa requested from the Shareholder as well as the AGSA a one (1) month extension of submitting Audited AFS from 31 July 2018 to 31 August

2018. This extension was duly granted. However on 30 August 2018, Necsa requested a further extension to 31 December 2018. The Shareholder granted Necsa an extension of submitting the AFS to the AGSA on 31 October 2018 and requested the AGSA to finalize the audit by 30 November 2018. Necsa and its 100% subsidiary Pelchem did not submit AFS for auditing on 31 October 2018. The previous board was dissolved and the new board was appointed on 06 December 2018. The first meeting with the Shareholder, AGSA and the new board was held on 13 December 2018. At this meeting, the new board stated they cannot vouch for any information contained on the Annual Report and not in a position to sign-off on the previous information submitted by the previous board. At the next meeting held on 21

January 2019, it was agreed between the relevant parties that the AGSA can only conclude on the AFS that are formally submitted by the Accounting Authority (Board). In the case of Necsa and Pelchem, the only AFS that were submitted by the Board were Draft AFS submitted on 31 May 2018.

The Draft AFS submitted on 31 May 2018 excluded all the AGSA proposed journals as well as management journals processed from 01 June 2018 to 12 December 2018 that had been incorporated both in Caseware and ERP systems. In order for the opening balances to be equal to the signed-off AFS, all the journals processed between 01 June 2018 and 2019 and ensure that AGSA has a correct base. The restatement of Prior Year emanates from statements that are contained above and are summarized below.

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38. PRIOR PERIOD ERRORS (CONTINUED)

Prior period errors are omissions from, and misstatements in, an entity's financial statements for one or more prior periods arising from a failure to use, or misuse of, reliable information that was available and could reasonably be expected to have been obtained and taken into account in preparing those statements.

Such errors result from mathematical mistakes, mistakes in applying accounting policies, oversights or misrepresentations of facts, and fraud.

38.1 Impairment of LEU Target Plate Asset-in- Progress Restatement

The auditors identified possible impairment indicators relating to LEU Fuel and Target Plate Plant (LEU) of Asset-in-Progress with a carrying value of R80.6 million during the 2017/18 audit process. Management subsequently provided the auditors with the documents that in their view demonstrates the future economic benefit of the LEU project. The auditors acknowledged the background, the technology license agreement, feasibility study documents and business for the security of supply of LEU fuel and targets plates.

The auditors issued a disclaimer audit finding on this matter citing the fact that the documents provided by management was not considered to be appropriate to serve as substantive evidence supporting management's view that the project should not be impaired because no actual impairment calculation was done as required by IAS36. The auditors issued a disclaimer audit opinion stating "they do not have any evidence that the recoverable amount of that project is greater than zero (0). Therefore, the full amount of this project should possibly be impaired. To this extent, the R80.6 million has been temporary impaired in the restated 2017/18 for 2018/19 AFS.

Notwithstanding that in the unaudited AFS, the asset has been impaired to be prudent, in the response to the audit finding for 2017/18 regarding the impairment of LEU Asset-in-Progress of R80.7 million, management has submitted another evidence to the auditors in during May 2019 after application of the requirements of IAS36 they are still of the view that the asset should not be impaired because of the following:

- the recoverable amount is higher than zero (0), recoverable amount is R179.1 million which is way higher the current carrying value of R80.7 million in the Balance Sheet;
- Calculated that Net Present Value is R179.1 million;
- Calculated that the Internal Rate of Return is 22.33%;
- Calculated that the Hurdle Rate is 13.25%

Secondly, management applied other IFRS standards such as IAS38 and determined that the Intellectual Property of this project was determined to be amounting to R30.4 million and the assets all arise from the development of the Plant. During this exercise, it was determined that no research cost were expended.

Thirdly, the balance of the balance of R80.7 million is R50.2 million attributable to LEU plant meets the definition of IAS16 (Property Plant and Equipment).

38.2 Summary of differences in the state of financial position and statement of Comprehensive income due to restatement

The tables below illustrates the differences on the impacted accounts in the statement of financial position and statement of comprehensive income due to the restatements of the 2018 figures.



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38. PRIOR PERIOD ERRORS (CONTINUED)

	Note(s)	Previously stated 2018	Restatement 2018	Net movement
Effect on Statement of Financial Position- Company - 2018				
Assets				
Non-Current Assets				
Property, plant and equipment (1)	5	993,450	904,904	(88,545)
Investment property	4	-	-	-
Investments in subsidiaries (2)	6	243,749	220,701	(23,048)
Investments in associates	7	-	-	-
Other financial assets (6)	9	441,940	443,883	1,943
Decommissioning and Decontamination of Stage 1 (3)	41	3,166,102	3,309,472	143,370
Decommissioning and Decontamination of Stage 2 (4)	41	186,921	198,064	11,143
Vaalputs After Care		-	-	-
		5,032,162	5,077,024	44,863
Current Assets				
Inventories (5)	11	61,641	66,115	4,474
Loans to group companies	8	-	-	-
Trade and other receivables	12	61,250	123,031	61,781
Other financial assets (6)	9	281,082	282,003	921
Prepayments		-	-	-
Cash and cash equivalents	13	15,012	14,822	(190)
		418,985	485,971	66,986
Total Assets		5,451,147	5,562,995	111,849
Equity and Liabilities				
Equity				
Equity Attributable to Equity Holders of Parent:				
Share capital	15	-	-	-
Reserves	15	-	-	-
Retained income	15	(510,752)	(593,163)	(82,411)
		(510,752)	(593,163)	(82,411)
Total Equity		(510,752)	(593,163)	(82,411)
Liabilities				
Non-Current Liabilities				
Compound instruments	42	-	-	-
Finance lease liabilities (7)	17	1,494	2,239	745
Retirement benefit obligation	18	-	-	-
Deferred income	19	442,654	442,850	196
Provisions (9)	20	403,573	428,535	24,962
Investment contributions for future liabilities	43	38,285	37,693	(592)
Decommissioning and Decontamination stage 2	48	570,766	541,754	10,988
Decommissioning and Decontamination stage 1 (3)		3,166,102	3,309,472	143,370
		4,622,874	4,762,543	179,669
Current Liabilities				
Trade and other payables	21	81,383	88,894	7,511
Loans from group companies	8	58,969	59,081	112

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38. PRIOR PERIOD ERRORS (CONTINUED)

	Note(s)	Previously stated 2018	Restatement 2018	Net movement
Other financial liabilities	16	-	-	-
Finance lease liabilities	17	1,792	450	(1,342)
Retirement benefit obligation	18	-	-	-
Deferred income	19	-	-	-
Provisions (9)	20	54,109	51,023	(3,086)
Amounts received in advance (8)		250,335	258,788	8,453
Decommissioning and Decontamination stage 2	48	-	-	-
Bank overdraft	13	-	-	-
		446,588	458,236	11,648
Total Liabilities		5,069,462	5,220,779	191,317
Total Equity and Liabilities		4,558,710	4,627,616	108,906

Effect on Statement of Comprehensive Income - Company - 2018		Previously stated 2018	Restatement 2018	Net movement
Revenue	26	1,072,447	1,090,760	18,313
Cost of sales	11	(257,454)	(256,013)	1,441
Other income		60,419	79,425	19,006
Government Grant Income (Decommissioning and Decontamination Stage 1)	41	236,052	368,820	132,768
Acceptance of Decommission and Decontamination Stage 1	41	(236,052)	(368,820)	(132,768)
Investment income	28	364,764	364,659	(105)
Fair value adjustments		(121,136)	(27,928)	93,208
Finance cost	29	(246,051)	(256,498)	(10,447)
Other comprehensive income for the year net of taxation	31	70,360	51,631	(18,729)
Other operating expenses		(820,179)	(1,000,824)	(180,645)
		123,170	45,212	(77,958)

Property, plant and equipment (1)

Impairment of LEU Fuel and Target Plates Asset-in-Progress which its carrying value is zero (R80.7 million). There were impairment indicators for Solvent Extraction Pilot Plant as the carrying amount (R2.2 million) Correction of Reversal of Depreciation (R5.7 million) erroneously calculated on Investment Property.

Investments in subsidiaries (2)

Write-off of the Pelchem investment (R23.1 million). Additional details on the transaction documented on this note.

Decommissioning and Decontamination of Stage 1 (3)

Decommissioning and Decontamination Stage 1 prior year correction (R143.4 million)

Decommissioning and Decontamination of Stage 2 (4)

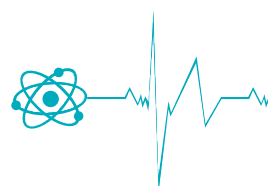
Decommissioning and Decontamination Stage 1 prior year correction (R11.1 million)

Inventories (5)

Understated of Revenue included in WIP (R4.5 million)

Other financial assets (6)

Decommissioning and Decontamination stage 2 government grant receivable (R921 K)



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Group			Company		
2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

38. PRIOR PERIOD ERRORS (CONTINUED)

Finance lease liabilities (7)

The finance lease for vehicles liabilities (R526 K) in 2017/18 not adjusted for leases that have terms that have expired. This is a reversal of these liabilities.

The finance lease for Electronic Office Equipment liabilities (R71 K) in 2017/18 not adjusted for leases that have expired. This is a reversal of the liabilities associated expired leases

Amounts received in advance (8)

Prior year deposits adjusted (R8.5 million)

The amount was reflected as payment in advance and not applied to sundry income to confirm the origin recons not performed

Provisions (9)

Interest received (R20.4 million) on Safari FED investment that was not accrued to the Long Term Provision. The provision for Safari D&D (R1.3 million) was not incorporated in the 2017/18 AFS.

The provision for NTP D&D (R994 K) was not incorporated in the AFS. Retention fees (R194 K) understated GEA client

39. GOING CONCERN

The Annual Financial Statements have been prepared on the basis of accounting policies applicable to a going concern. According to the Conceptual Framework of Financial Reporting, the financial statements are prepared using the underlying assumption that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

40. PUBLIC FINANCE MANAGEMENT ACT

Fruitless and wasteful expenditure:

Opening balance	271	506	1,295	130	459	604
Overpayments not recoverable 1	275	228	69	237	134	67
Recoveries made	(6)	(5)	(58)	(3)	(5)	(56)
Internal losses 2	-	-	65	-	-	65
Written off to the statement of comprehensive income	(72)	(458)	(865)	-	(458)	(221)

Fruitless and wasteful expenditure unresolved	468	271	506	364	130	459
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Fruitless and wasteful expenditure:

Comments (including actions taken with regard to matters)

1 Disciplinary steps have been taken against staff to address the shortcoming.

2 This matter is under investigation in order to identify the root cause and persons involved.

Criminal or disciplinary steps:

The irregular expenditure was investigated according to the treasury guidelines on irregular expenditure, upon investigation it was found that the state did not suffer any loss due to the transgression.

There were no material losses through criminal conduct or irregular expenditure. Therefore criminal steps are not applicable. Disciplinary steps have been taken were applicable.

Gifts, donations or sponsorships received:

Employees are allowed to receive gifts and courtesies. Gifts and courtesies received above R300 are recorded in a register and approved by the relevant manager. Gifts and courtesies received above R3,000 needs written permission from the Group Executive or CEO as appropriate.

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Group			Company		
2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

40. PUBLIC FINANCE MANAGEMENT ACT (CONTINUED)

Remissions or payments made as an act of grace:

There were no remissions or payments made as an act of grace.

Irregular expenditure:

Opening	74,195	-	-	28,364	-	-
Functionality criteria specified in Request for tender "not clear and specific" However all suppliers were treated consistently using the same template. Therefore the tender process was fair, equitable, transparent and consistent in line with s217 of the South African Constitution.	99,320	74,195	-	-	-	-
Non-adherence to procurement process	-	-	-	50,752	28,364	-
Less: Amounts condoned	(12)	-	-	-	-	-
	173,503	74,195	-	79,116	28,364	-

The irregular expenditure that was incurred in the current financial year and prior financial year for the group and company was a result of the contravention with supply chain management processes and legislation.

41. DECOMMISSIONING AND DECONTAMINATION

The South African Nuclear Energy Corporation Ltd (Necsa) has been established for the Republic in terms of the Nuclear Energy Act 46 of 1999 (the Act) to manage and operate the Republic's nuclear and related objectives. Necsa derives its mandate (powers and functions) solely from the Act and the Minister of Energy via the Department of Energy (DoE), and is subjected to the Policies and Procedures designed by the DoE.

The National Nuclear Regulator (NNR), an organ of the State, was established in terms of the National Nuclear Regulator Act 47 of 1999. Section 1 (xiv) of the NNR Act makes provision for the granting of nuclear authorisations, also known as Nuclear Installations Licenses (NILs). Section 20 (1) of the Act states that "No person may site, construct, operate, decontaminate or decommission a nuclear installation, except under the authority of a nuclear installation license".

Section 21 (1) requires that any person wishing to site, construct, operate, decontaminate or decommission a nuclear installation may apply in the prescribed format to the Chief Executive Officer of the NNR for a nuclear installation license and must furnish such information as the NNR Board of Directors requires. Necsa is currently the license holder of forty one (41) Nuclear Installation Licenses (NILs) that was issued by the NNR. The NNR approved NILs issued to Necsa, govern all nuclear activities undertaken in the disused and operational nuclear facilities.

The Republic of South Africa announced its intention to abandon the Nuclear Weapons Programme in 1989 and acceded to the Non- Proliferation of Nuclear Weapons on 10 July 1991. Stemming from this announcement Necsa started in 1995 with the shutdown of the various strategic nuclear facilities directly linked to the Nuclear Weapons Programme while the other strategically related operating nuclear facilities were excluded to continue the maintenance of the Necsa site license and to support some of the current operating facilities to date.

These shutdown facilities (some have been Decommissioned & Decontaminated (D&D) while others are scheduled to be Decommissioned & Decontaminated) are currently known as past-disused strategic nuclear facilities. All the other ancillary nuclear facilities that were strategically used for the Nuclear Weapons Programme have been kept operational for the new Non-Weapons (peaceful application of nuclear energy) mandate and are currently known as the Past Operational Strategic Nuclear facilities.

In terms of Section 55 (2) read with Section 1 (xiia) of the Nuclear Energy Act, 1999 (Act No. 46 of 1999), the D&D of Past Strategic Nuclear facilities, including the management of related radioactive material and waste, is an institutional nuclear obligation that vests in the Minister of Minerals and Energy (now Minister of Energy). Necsa is responsible for discharging of the liabilities and government is responsible for funding thereof.

In 2000 Necsa was requested by the then Department of Minerals and Energy (DME) to quantify the total nuclear and related liability at the Pelindaba site arising from the nuclear weapons/strategic programme. Necsa then submitted to Cabinet, in April 2004, through the DoE, a Nuclear Liabilities Management Plan (NLMP). The NLMP differentiated between three stages of D&D, namely:



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41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

- Stage 1- Disused Facilities;
- Stage 2- Strategic Operational Nuclear Facilities (currently in use); and
- Stage 3- HEU Spent Fuel.

In November 2005 Cabinet approved funding of approximately R1,8 billion (2004/05 Rand values) as reflected below: The D&D of disused historical nuclear facilities (Stage 1) of the Nuclear Liabilities Management Plan (R1,5 billion) and Decommissioning and remediation of Thabana waste trenches & waste storage facilities, which were excluded from the NLMP, R270 million.

The consolidation of nuclear liabilities management funding into a single ring-fenced budget;

That the DoE and the National Treasury work out a programme for the funding of R1,8billion in 2004/05 Rand values estimated to discharge the liability over a 28 years period.

In order to provide a monitoring mechanism for effective oversight of the implementation of the approved 2005 Cabinet resolutions, DoE issued a Policy Procedure on the Management of Nuclear Liabilities arising from Past Strategic Nuclear Facilities in May 2008. According to the policy procedure, Necsa must submit to DoE a formal reassessment of the liabilities every five years or at a shorter frequency if so required by the Minister. The initial methodology for reassessing the liabilities and any changes to the methodology thereafter must be agreed with the DoE prior to implementation.

The re-assessment takes in account the following and is subjected to international experts benchmarking and validation:

- Review of variables and values used in the assessment model (e.g. interest rates, inflation rates, waste inventories, processing cost, etc.)
- Review assumptions made in the model.
- Appropriateness of model used.
- Adjustments due to liabilities discharged in previous years.

The assessed amount is adjusted for inflation annually until the next re-assessment. Since 2007/08 NECSA has been receiving annually ring-fenced grants from the State to discharge this liability on behalf of the DoE.

Stage 1 Liabilities

In 2013/14 financial year, all the parties considered that the Decommissioning and Decontamination liability vested in the Minister and was recognised in the financial statements of the DoE; and NECSA was acting as an agent of the Minister with regard to D&D. A Senior Counsel opinion, obtained in March 2016, confirmed that the liability to Decommission and Decontaminate past strategic nuclear facilities rests with NECSA with regard to both disused and currently in use facilities; and that the State is obligated to fund these liabilities.

The Minister has accepted this opinion and has transferred this liability as well as Cabinet's approval to fund the Stage 1 liability to NECSA; to be recognised in NECSA's financial statements as from the 2014/15 financial year.

An independent international expert, Crossland Consulting Ltd, has confirmed that the assessment methodology used to determine the liability was in line with international best practice and that the amount was sound and reasonable.

After adjusting for inflation and the costs already incurred this liability has been determined to be R2.8 billion as at 31 March 2016 and in terms of IAS 37 this liability is recognised as a provision (liability) and the State's funding obligation, approved by Cabinet is recognised as an asset.

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41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

Disused facilities

- Cabinet approval was obtained for Stage 1 Decommissioning and decontamination facilities, therefore an asset has been recognised with the matching liability.

	Group			Company		
	2019	2018	2017	2019	2018	2017
	R '000	R '000	R '000	R '000	R '000	R '000
Non-current assets						
Decommissioning & decontamination - Stage 1	3,556,000	3,309,472	2,727,063	3,556,000	3,309,472	2,727,063
Non-current liabilities						
Decommissioning & decontamination - Stage 1	(3,556,000)	(3,309,472)	(2,727,063)	(3,556,000)	(3,309,472)	(2,727,063)
	-	-	-	-	-	-
Government grant income (Decommissioning & decontamination - Stage 1)	18,431	368,820	264,857	18,431	368,820	264,857
Acceptance of Decommissioning & decontamination - Stage 1	(18,431)	(368,820)	(264,858)	(18,431)	(368,820)	(264,857)
	-	-	(1)	-	-	-

	Opening	Additions	Utilised	Reversed	Change in discount factor	Total
Assets	3,309,472	-	-	-	-	3,309,472
Liabilities	(3,309,472)	-	-	-	-	(3,309,472)
	-	-	-	-	-	-

Stage 2 Liabilities

Strategic Operational Nuclear Facilities currently in use

- The asset can only be recognised to the extent of the letter of grant (Medium Term Expenditure Framework) received from the shareholder (Department of energy).
- The recognition of this liability has negatively impacted the Equity of the Company and the Group in the amount of R255 million in the 2015/16 financial year and a further charge of R 41 million in the 2016/17 financial year and RXX in the 2017/18 financial year. The recognition of this liability will have no impact on the Company's and the Group's future cash flows until 2030. Refer to note 44 for further discussion on the Company's Decommission and Decontamination obligations.

The Stage 2 facilities are currently in operation and these facilities will only be Decommissioned and Decontaminated once operations cease. Based on the current capacities of these facilities it is estimated that they will be in use for at least the next 30 years, where after they will be Decommissioned and Decontaminated. However, based on international experience, it is considered that these facilities could be refurbished when needed to be used indefinitely. The Stage 2 facilities include the SAFARI-1 Reactor which NTP Radioisotopes SOC Ltd (NTP), a subsidiary of Necsa, is contracted to manage and operate. In terms of the manage and operate agreement NTP and Necsa will share the Decommissioning and Decontamination costs of SAFARI-1; and NTP will be charged based on the commercial utilisation of the SAFARI-1 by NTP. NTP's contribution is ring-fenced and invested to be utilised when Decommissioning and Decontamination commences.



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41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

Strategic Operational Nuclear Facilities currently in use:

During 2013/14, the D&D Stage 2 liability assessment by management was calculated at R478 million. The formal assessment of liability is done periodically further base values are contained in the Ministry of Finance's letter. In between the formal assessment, applicable economic indicators such as inflation are utilized to calculate the liability.

The Stage 2 Liability has been assessed on the basis of the same methodology as for Stage 1. The re-assessment is conducted every five (5) years and the assessed amount will be adjusted for inflation until the next re-assessment. The last assessment was conducted in 2015/2016 financial year. An independent international expert, Crossland Consulting Ltd, has confirmed that the assessment methodology used to determine the liability was in line with international best practice and that the amount of R512 million was sound and reasonable as on 30 March 2017.

Up to 2017/18, the asset could only be recognised to the extent of the allocation letter of grant for the Medium Term Expenditure Framework (MTEF) period received from the shareholder Department of energy. However, in June 2018, the Minister of Finance through the Cabinet Memo 04 of 2018 accepted the funding obligation for Stage 2. To this extent, the Stage 2 liability matches the asset with effect from 2018/19 financial year. To address the incongruity between liabilities exceeding the asset with regard to D&D Stage 2, Necsa through the Department of Energy (DoE) drafted a Cabinet Memorandum 04 of 2018 requesting the Cabinet to approve in writing the funding commitment of Stage 2 liability for Operational Nuclear Facilities at Necsa.

To this extent, the cabinet approved the funding of Stage 2 and requested the DoE and National Treasury to finalize the matter in such a way that the AGSA will be satisfied that the funding obligation of Stage 2 lies with the state. Therefore, with effect from 2018/19 the Cabinet memo read with the Minister of Finance's letter complies with IFRS9 i.e. definition of a financial asset.

Notwithstanding the letter from the Minister of Finance providing a letter stating that the government will fund the Decommissioning and Decontamination of Stage 2 liability for an amount of approximately R576 million over thirty (30) year period (excluding inflationary increases), the AGSA has rejected this letter citing that minister change over time.

The National Treasury has allocated funding in terms of the Medium Term Expenditure Framework as follows (Inclusive of VAT) for Stage 2 as follows:

2015/16: R 16.1 million (received)

2016/17: R 17.1 million (received)

2017/18: R 18.1million (received)

2018/19: R 19.2 million (received)

2019/20: R 20.2 million (committed)

2020/21: R 21.3 million (committed)

	Group			Company		
	2019	2018	2017	2019	2018	2017
	R '000	R '000	R '000	R '000	R '000	R '000
Non-current assets						
Decommissioning & decontamination - Stage 2	151,163	198,064	152,941	151,163	198,064	152,941
Non-current liabilities						
Decommissioning & decontamination - Stage 2	(541,472)	(541,754)	(449,951)	(541,472)	(541,754)	(449,951)
	(390,309)	(343,690)	(297,010)	(390,309)	(343,690)	(297,010)

	Opening	Total
Assets	198,064	198,064
Liabilities	(541,754)	(541,754)
	(343,690)	(343,690)

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42. VAALPUTS AFTER CARE

	Group			Company		
	2019	2018	2017	2019	2018	2017
	R '000	R '000	R '000	R '000	R '000	R '000
Non-current Asset	3,389	3,766	4,142	3,389	3,766	4,142
Non-current liabilities	(91,454)	(83,314)	(76,792)	(91,454)	(83,314)	(76,792)
	(88,065)	(79,548)	(72,650)	(88,065)	(79,548)	(72,650)

Vaalputs institutional control

In terms of Section 50 of the Nuclear Energy Act, the responsibility for the Republic's institutional nuclear obligations vests in the Minister of Minerals and Energy (now Energy). The management of nuclear waste disposal on a national basis is one of these obligations as defined in Section 1(xii) of the Act.

The management of radioactive waste disposal on a national basis is assigned to the National Radioactive Waste Disposal Institute. The Institute is an independent entity established by statute under the provision of section 55(2) of the Nuclear Energy Act to fulfil the institutional obligation of the Minister of Energy. Although the institute was established through the statutes and that Board of Directors were appointed, it is still not fully operational.

In terms of section 30(8) of the Disposal Institute Act, DoE subsequently appointed Necsa on 7 March 2010 to maintain the Nuclear. Installation License for Vaalputs (NIL28) until such time as the NRWDI is in a position to take over these functions to the satisfaction of the NNR.

The liability associated with the "after care" was previously treated as a contingent liability due to the various uncertainties regarding the reasonableness and plausibility of the cost estimate as well as the uncertainty regarding the radiological end, state of these facilities.

It is envisaged that an assessment of the long term safety of the site will be conducted at the end of the operational period to determine whether the remaining facilities and the environmental pathways should continue to be monitored after site closure, taking into account the total nuclide inventory as well as updated safety assumptions and conditions at the time. This safety assessment will form the basis according to which post closure residual risks (engineering and environmental) will be managed in the institutional control period.

The "after care" liability assessment should follow the same methodology and adhere to the agreed governance processes that were applicable for the past strategic disused facilities to ensure the reasonableness and accuracy of the liability estimate. Such process will have to follow the required Governance processes and expert review and verification process to pass the test of being "measured with sufficient reliability".

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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

43. INVESTMENT CONTRIBUTIONS FOR FUTURE LIABILITIES

This represents contributions invested / ring fenced for the future decommissioning of facilities.

	2018	Movement	2019
	R'000	R'000	R'000
NTP - Commercial facilities	21,254	975	22,229
SAFARI-1	16,439	1,346	17,785
	37,693	2,321	40,014

The Stage 2 facilities include the SAFARI-1 Reactor which NTP Radioisotopes SOC Ltd (NTP), a subsidiary of Necsa, is contracted to manage and operate. In terms of the manage and operate agreement NTP and Necsa will share the Decommissioning and Decontamination costs of SAFARI-1; and NTP will be charged based on the commercial utilisation of the SAFARI-1 by NTP. NTP's contribution is ring-fenced and invested to be utilised when Decommissioning and Decontamination commences. Refer to note 41 for further information on Decommissioning and Decontamination costs.

44. FAIR VALUE INFORMATION

Fair value hierarchy

This note provides information about how the Group determines fair values of various financial assets and financial liabilities. The table below analyses assets and liabilities carried at fair value. The different levels are defined as follows:

Level 1: Quoted unadjusted prices in active markets for identical assets or liabilities that the group can access at measurement date.

Level 2: Inputs other than quoted prices included in level 1 that are observable for the asset or liability either directly or indirectly.

Level 3: Unobservable inputs for the asset or liability.

Levels of fair value measurements

Level 1

Recurring fair value measurements

Assets	Note(s)						
Investments in subsidiaries at fair value	6						
Investments in unlisted subsidiaries		220,700	-	-	-	-	-
Other subsidiaries	1	-	-	-	-	-	-
Total investments in subsidiaries at fair value		220,701	-	-	-	-	-
Available for sale financial assets							
Listed shares (1)	9	1,452	1,569	1,303	1,416	1,528	1,270
Unit trusts (1)		193,939	408,287	420,131	193,939	408,287	420,131
Total available for sale financial assets		195,391	409,856	421,434	195,355	409,815	421,401

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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

44. FAIR VALUE INFORMATION (CONTINUED)

Liabilities	Note(s)					
Other						
Other 1	5,884	7,109	9,280	-	-	-
Other 2	45,959	32,000	124,887	20,000	5,000	101,847
Total other	51,843	39,109	134,167	20,000	5,000	101,847
Total	364,249	370,747	1,303	175,355	404,815	1,270

(1) The following classes of financial assets at fair value through profit or loss are measured to fair value using quoted market prices:

- Listed shares
- Unit trusts

(2) The decrease from the 2016 to 2017 year of assessment in the available for sale financial assets relates to R100m being used for security for the Nedbank overdraft loan.

Financial assets at fair value through profit or loss are recognised at fair value, which is therefore equal to their carrying amounts.

(3) The loan is secured by a first mortgage bond registered over land and buildings Portion 91 of Farm 601, Klipplaatdrif, Vereeniging. Interest is charged at prime rate minus 1%.

Level 2

Recurring fair value measurements

Assets	Note(s)					
Investments in subsidiaries at fair value	6					
Investments in listed subsidiaries		220,700	220,700	220,700	-	-
Investments in unlisted subsidiaries		-	-	-	-	-
Investments in foreign subsidiaries		1	1	1	-	-
Total investments in subsidiaries at fair value		220,701	220,701	220,701	-	-
Investments in associates at fair value						
Investments in listed associates	7	2	1	1	-	-
Investments in unlisted associates		-	40	40	-	-
Investments in foreign associates		4,331	107	2,364	-	-
Total investments in associates at fair value		4,333	148	2,405	-	-
Available for sale financial assets						
Unit trusts	9	(193,939)	-	-	(193,939)	-

Liabilities	Note(s)					
Other						
Other 1		-	233	633	-	-
Other 3		6,889	3,546	5,305	3,225	3,286
Total other		6,889	3,779	5,938	3,225	3,286
Total		24,206	217,070	-	(197,164)	(3,286)



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2019	2018	2017	2019	2018	2017
R '000	R '000	R '000	R '000	R '000	R '000

44. FAIR VALUE INFORMATION (CONTINUED)

Level 3

Recurring fair value measurements

Assets	Note(s)					
Available for sale financial assets	9					
Other financial assets 1		193,939	-	-	193,939	-
Total		193,939	-	-	193,939	-
Total		-	42,001	42,001	-	-

All are recurring fair value measurements except Pelchem.

(1) This relates to a once-off cash flow hedge that was entered into due to a long term inventory purchase contract. The Company no longer enters into cash flow hedge transactions.

(2) Retention fees receivable relates to contracts with clients where an amount is withheld until the quality conditions of the contract have been fulfilled. The fair value approximates the carrying value.

Necsa receives an allocation letter for Stage 2 decommissioning and decontamination, relating exclusively to decommissioning and decontamination for operational facilities. The fair value is calculated in terms of the allocation letter received relating to the above mentioned decommissioning and decontamination for operational facilities.

Highest and best use

All of the assets' current use are the highest and best use.

45. EVENTS AFTER THE REPORTING PERIOD

Non-Adjusting entry:

The NTP Board passed a resolution, on the 25 May 2018, to declare a dividend of R20 million to Necsa. As such, this was considered to be a non-adjusting entry and is not provided for in the annual financial statements of the Company and Group.

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46. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

Capital risk management

The group's objective when managing capital (which includes share capital, borrowings, working capital and cash and cash equivalents) is to maintain a flexible capital structure that reduces the cost of capital to an acceptable level of risk and to safeguard the group's ability to continue as a going concern while taking advantage of strategic opportunities in order to maximise stakeholder returns sustainability.

The group manages capital structure and makes adjustments to it in light of changes in economic conditions and the risk characteristics of the underlying assets. In order to maintain the capital structure, the group may adjust the amount of dividends paid to the shareholder, return capital to the shareholder, repurchase shares currently issued, issue new shares, issue new debt, issue new debt to replace existing debt with different characteristics and/or sell assets to reduce debt.

Compound instruments	42	91,454	83,314	76,792	91,454	83,314	76,792
Loans from group companies		43,704	104,009	40,493	42,603	97,053	40,422
Loans from shareholders		-	1,432	11,886	-	-	-
Other financial liabilities	16	6,371	13,851	13,168	1,118	5,949	756
Finance lease liabilities	17	6,889	2,949	5,305	3,225	2,689	3,748
Operating lease liability		-	-	15	-	-	-
Trade and other payables	21	503,780	466,277	86,288	49,754	93,471	127,084
Total borrowings		652,198	671,832	233,947	188,154	282,476	248,802
	13	(324,909)	(475,697)	25,190	3,283	(9,822)	64,615
Net borrowings		327,289	196,135	259,137	191,437	272,654	313,417
Equity		757,125	1,303,045	1,089,750	138,528	(56,114)	676,984
Gearing ratio		43 %	15 %	24 %	138 %	(486)%	46 %

Financial risk management

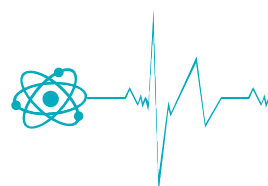
Overview

The group is exposed to the following risks from its use of financial instruments:

- Credit risk;
- Liquidity risk; and
- Market risk (currency risk, interest rate risk and price risk).

The Board has overall responsibility for the establishment and oversight of the group's risk management framework. The board has established the risk committee, which is responsible for developing and monitoring the group's risk management policies. The committee reports quarterly to the Board on its activities.

The group's risk management policies are established to identify and analyse the risks faced by the group, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the group's activities.



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46. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED) CREDIT RISK

Credit risk is the risk of financial loss to the group if a customer or counterparty to a financial instrument fails to meet its contractual obligations.

The maximum exposure to credit risk is presented in the table below:

Group	2019				2018				2017			
	Gross carrying amount	Credit loss allowance	Amortised cost / fair value		Gross carrying amount	Credit loss allowance	Amortised cost / fair value		Gross carrying amount	Credit loss allowance	Amortised cost / fair value	
Loans to group companies	8	43,704	-	43,704	104,009	-	104,009	43,803	43,803	-	43,803	
Loans to shareholders		-	-	-	1,431	-	1,431	-	-	-	-	
Trade and other receivables	12	566,156	(220,483)	345,673	508,856	(123,865)	384,991	358,624	(206,293)	152,331		
Cash and cash equivalents	13	371,195	-	371,195	509,063	-	509,063	100,600	-	100,600		
		981,055	(220,483)	760,572	1,123,359	(123,865)	999,494	503,027	(206,293)	296,734		

Company	2019				2018				2017			
	Gross carrying amount	Credit loss allowance	Amortised cost / fair value		Gross carrying amount	Credit loss allowance	Amortised cost / fair value		Gross carrying amount	Credit loss allowance	Amortised cost / fair value	
Loans to group companies	8	50,422	-	50,422	39,487	-	39,487	41,177	-	41,177		
Trade and other receivables	12	304,484	(210,926)	93,558	206,224	(83,072)	123,152	208,454	(60,753)	147,701		
Cash and cash equivalents	13	16,957	-	16,957	14,940	-	14,940	37,242	-	37,242		
	371,863	(210,926)	160,937	260,651	(83,072)	177,579	286,873	(60,753)	226,120			

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46. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

Liquidity risk

The maturity profile of contractual cash flows of non-derivative financial liabilities, and financial assets held to mitigate the risk, are presented in the following table. The cash flows are un-discounted contractual amounts.

Group - 2019

		Carrying amount
Non-current liabilities		
Financial liabilities at fair value	16	2,932
Finance lease liabilities	17	3,819
Current liabilities		
Trade and other payables	21	494,349
Loans from group companies		43,704
Financial liabilities at fair value	16	3,439
Finance lease liabilities	17	3,070
Bank overdraft	13	46,286
		597,599

Group - 2018

		Carrying amount
Non-current liabilities		
Financial liabilities at fair value	16	4,405
Finance lease liabilities	17	2,300
Current liabilities		
Trade and other payables	17	461,471
Loans from group companies		104,009
Loans from shareholders		1,432
Financial liabilities at fair value	16	9,446
Finance lease liabilities	17	649
Bank overdraft	13	33,368
		617,080



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46. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

Company - 2019

		Less than 1 year	Total	Carrying amount
Non-current liabilities				
Finance lease liabilities	17	-	-	1,385
Current liabilities				
Trade and other payables	17	44,949,743	44,949,743	44,058
Loans from group companies		-	-	42,603
Financial liabilities at fair value	16	-	-	1,118
Finance lease liabilities	17	-	-	1,840
Bank overdraft	13	-	-	20,240
		44,949,743	44,949,743	111,244

Company - 2018

		Less than 1 year	Total	Carrying amount
Non-current liabilities				
Finance lease liabilities	17	-	-	2,239
Current liabilities				
Trade and other payables	21	37,572,892	37,572,892	92,607
Loans from group companies		-	-	97,053
Financial liabilities at fair value	16	-	-	5,949
Finance lease liabilities	17	-	-	450
Bank overdraft	13	-	-	5,118
		37,572,892	37,572,892	203,416

Foreign currency risk

The group is exposed to foreign currency risk as a result of certain transactions and borrowings which are denominated in foreign currencies. Exchange rate exposures are managed within approved policy parameters utilising foreign forward exchange contracts where necessary. The foreign currencies in which the group deals primarily are US Dollars, Euros and Yen.

Exposure in Rand

The net carrying amounts, in Rand, of the various exposures, are denominated in the following currencies. The amounts have been presented in Rand by converting the foreign currency amounts at the closing rate at the reporting date.

Foreign currency sensitivity analysis

The following information presents the sensitivity of the group to an increase or decrease in the respective currencies it is exposed to. The sensitivity rate is the rate used when reporting foreign currency risk internally to key management personnel and represents management's assessment of the reasonably possible change in foreign exchange rates. The sensitivity analysis includes only outstanding foreign currency denominated amounts and adjusts their translation at the reporting date. No changes were made to the methods and assumptions used in the preparation of the sensitivity analysis compared to the previous reporting period.

At 31 March 2019, if the Rand/dollar exchange rate had been -% (2018: -% ; 2017: %) higher or lower during the period, with all other variables held constant, profit or loss for the year would have been R - (2018: R - ; 2017: R -) higher and R - (2018: R - ; 2017: R -) lower.

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46. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

At 31 March 2019, if the Rand/dollar exchange rate had been -% (2018: -% ; 2017: %) higher or lower during the period, with all other variables held constant, profit or loss for the year would have been R - (2018: R - ; 2017: R -) higher and R - (2018: R - ; 2017: R -) lower.

Interest rate risk

The group policy with regards to financial assets, is to invest cash at floating rates of interest and to maintain cash reserves in short-term investments in order to maintain liquidity, while also achieving a satisfactory return for shareholders.

Interest rate profile

The interest rate profile of interest bearing financial instruments at the end of the reporting period was as follows:

47. OTHER OPERATING GAINS (LOSSES)

Gains (losses) on disposals, scrapings and settlements

Property, plant and equipment	1,766	748	(1,464)	(38)	(727)	(84)
Other asset	(1,509)	-	-	-	-	-
	257	748	(1,464)	(38)	(727)	(84)

Reversal of impairment losses

Property, plant and equipment	-	(16)	-	-	-	-
Investments in subsidiaries, joint arrangements and associates	(3,310)	-	-	-	-	-
	(3,310)	(16)	-	-	-	-

Foreign exchange gains (losses)

Net foreign exchange (losses) gains	(6,303)	(11,112)	(11,174)	2,675	(6,174)	(7,078)
Total other operating gains (losses)	(9,356)	(10,380)	(12,638)	2,637	(6,901)	(7,162)

48. AMOUNTS RECEIVED IN ADVANCE

R79.3 million relates to funds received from the Department of Science and Technology for the setup and to equip infrastructure to support

Research and Development on the nuclear and biological facilities mainly at Academic Hospitals.

R70.2 million relates to funds received from PBMR for the Decommissioning and Decontamination of previously occupied buildings

R20.1 million relates to funds received and invoices made out to SANDIA for the security upgrades to the Necsa Facility.

49. OTHER OPERATING INCOME

Administration and management fees received	231	91	-	-	-	-
Commissions received	47	2,432	1,639	47	46	39
Royalties received	85,955	73,547	61,641	-	-	-
Other rental income	6,588	50,991	5,467	4,719	49,661	4,597
Other recoveries	(23)	(15)	29	(23)	(16)	(14)
Other income 1	8,809	1,243	(20,186)	-	-	-
Government Grant	18,431	368,820	264,857	18,431	368,820	264,857
Other income	9	6	83	-	-	-
Other income 3	16,984	(2,308)	27,477	11,774	15,237	16,367
Government grants	341,301	2,669	2,785	341,301	2,669	2,785
	478,332	497,476	343,792	376,249	436,417	288,631





1 Knowledge Dissemination

REFERRED JOURNAL, AND OTHER RESEARCH PUBLICATIONS

ISI journal publications

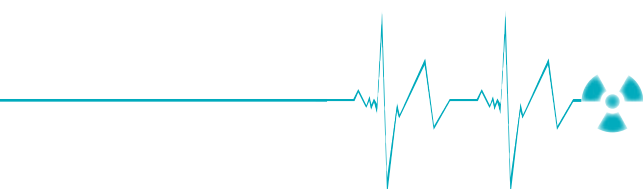
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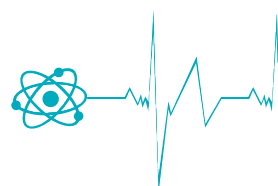
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