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South African Nuclear Energy Corporation SOC Limited

ANNUAL REPORT 2021

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ABBREVIATIONS AND ACRONYMS

ACS	Analytical and Calibration Services
AC&D	Access Control & Intrusion Detection
AEB	Atomic Energy Board
AEC	Atomic Energy Corporation
AET	Adult Education and Training
AFS	Audited Financial Statements
ACFO	Acting Chief Financial Officer
AGSA	Auditor-General of South Africa
ALARA	As Low As Reasonably Achievable
AMI	African Management Initiative
ANSTO	Australian Nuclear Science and Technology Organisation
API	Active Pharmaceutical Ingredient
ARC	Audit and Risk Committee
ARPL	Artisan Recognition of Prior Learning
ASME	American Society for Mechanical Engineers
B-BBEE	Broad-based Black Economic Empowerment
BBS	Behaviour-Based Safety
CAE	Compliance Assurance Enforcement Inspectorate
CAL	Calibration Laboratories
CCSR	Corporate Communication and Stakeholder Relations
CHIETA	Chemical Industries Education and Training Authority
CIO	Chief Information Officer
CNO	Chief Nuclear Officer
COSO	Committee of Sponsoring Organisations
Covid-19	2019 novel Coronavirus
CRM	Customer Relations Management
CRP	Collaborative Research Project
CRPM	Centre for Rapid Prototyping and Manufacturing
CSIR	Council of Scientific and Industrial Research
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organisation
CUT	Central University of Technology
DBSA	Development Bank of South Africa
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
DFFE	Department of Forestry, Fisheries and the Enviornment
DIIR	Disabling Injury Incidence Rate
DIRCO	International Relations and Cooperation
DMRE	Department of Minerals Resources and Energy
DOH	Department of Health
DOE	Department of Energy (US)
DOT	Department of Transport
DRP	Disaster Recovery Plan
DSI	Department of Science and Innovation
DSRS	Disused Sealed Radioactive Sources
Dti	Department of Trade and Industry
DWS	Department of Water and Sanitation
EAP	Employee Assistance Programme
EDMS	Electronic Document Management System
EE	Employment Equity
EIA	Environmental Impact Asessment
ERP	Enterprise Resource Planning
EXCO	Executive Committee
FCR	Financial Compliance and Reporting
FIDPM	Framework for Infrastructure Delivery and Procurement Management
GC	Gas Chromatography
GCEO	Group Chief Executive Officer
GCFO	Group Chief Financial Officer
GDE	Gauteng Department of Education
GMP	Good Manufacturing Practice
GTAC	Government Technical Advisory Centre
GTRI	Global Threat Reduction Initiative
HA-AWCC	High Activity-Active Well Coincidence Counter
HF	Hydrogen fluoride
HR	Human Resources
IAEA MSSP	International Atomic Energy Agency Membership Support Programme
IAEA	International Atomic Energy Agency
IBA	Ion Beam Analysis
IDC	Industrial Development Corporation
IFRS	International Financial Reporting Standards
ICPMS	Inductively Coupled Plasma Mass Spectrometry
IIT	Industrial Isotope Technology
INES	International Nuclear Event Scale
INIS	International Nuclear Information System
i-PCIF	interim Pre-Clinical Imaging Facility
IP	Intellectual Property
IRP	Integrated Resource Plan
ISCA	Independent Safety Culture Assessment
ISI	International Scientific Indexing

ISO 9001	Quality Management Systems - Requirements
IT	Information Technology
IVDs	Innovation Disclosures
KM	Knowledge Management
KNPS	Koeberg Nuclear Power Station
KPI	Key Performance Indicator
LEIP	Limpopo Eco-industrial Park
LEMS	Liquid Effluent Management Services
LEU	Low Enriched Uranium
LLW	Low Level Waste
MAPEP	Mixed Analyte Performance Evaluation Programme
MDS	Marketing and Development Services
MeASURe	Metrological and Applied Sciences University Research
MHC	Mobile Hot Cell
MPISI	Materials Probe for Internal Strain Investigations
MW PlasGAS	Medical Waste Plasma Gasification
MWh	Megawatt Hours
Molybdenum-99	A radioactive isotope of molybdenum
MPR	Multipurpose Reactor
MTEF	Medium Term Expenditure Framework
NCS	Nuclear Compliance Services
ND	National Diploma
NdF3	Neodymium Trifluoride
Necsa	South African Nuclear Energy Corporation SOC Limited
NEHAWU	National Education, Health and Allied Workers Union
Nersa	National Energy Regulator of South Africa
NFC	Nuclear Field Cycle
NFL	Nuclear Forensics Laboratories
NFP	Nuclear Forensics Programme
NIASA	Nuclear Industry Association of South Africa
NICD	National Institute for Communicable Diseases
NIPMO	National Intellectual Property Organisation
NKP	National Key Point
NLA	National Laboratory Association
NLM	Nuclear Liabilities Management
NMDN	Nuclear Materials Development Network
NNR	National Nuclear Regulator
NNSA	National Nuclear Security Administration
NQL	Neutron Quality Label
NQF	National Qualifications Framework
NRF	National Research Foundation
NRWDI	National Radioactive Waste Disposal Institute

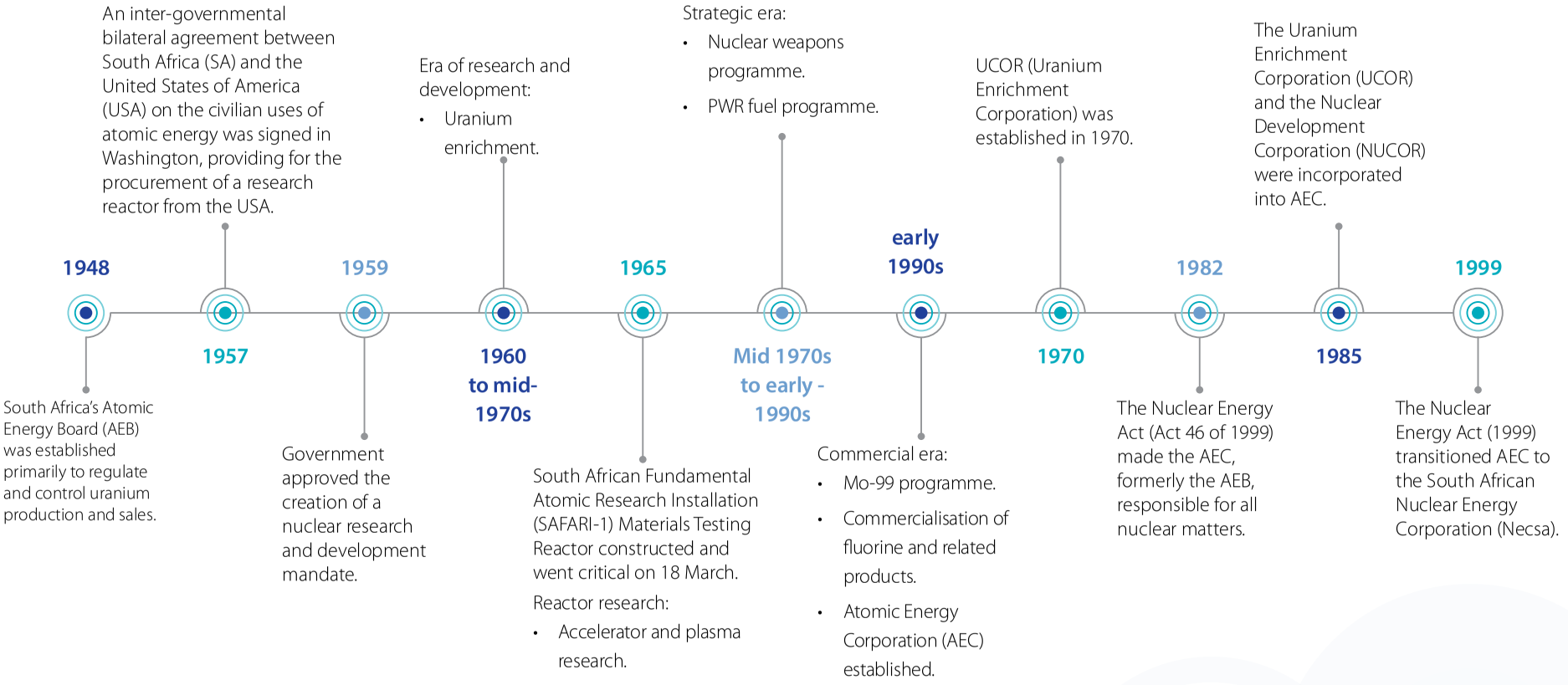
NSF	National Skills Fund
NSI	National System of Innovation
NTeMBI	Nuclear Technologies in Medicine and the Biosciences Initiative
NUCOR	Nuclear Development Corporation
NuMeRI	Nuclear Medicine Research Infrastructure
NSM	Nuclear Safeguards Management
NVC	Necsa Visitor Centre
NWLM	Nuclear Waste and Liabilities Management
NWR	Nuclear Waste Research
NWU	North-West University
OHSAS	Occupational Health and Safety Series
ORNL	Oakridge National Laboratory
OSCAR	Overall System for the Calculation of Reactors
OTT	Office of Technology Transfer
PAL	Pelindaba Analytical Laboratories
P&Cs	Projects and Consulting Services
PBL	Process-Based Licensing
PBMR	Pebble Bed Modular Reactor
PDO	Predetermined Objectives
PDZ	Plasma Dissociated Zircon
PET	Positron Emission Tomography
PFMA	Public Finance Management Act
PITSI	Powder Instrument for Transition in Structure
P-LABS	Pelindaba Laboratories for Accelerator Based Science
PlasWEn	Plasma Waste to Energy System
PPE	Property, Plant and Equipment
PSMA	Prostate-specific Membrane Antigen
PSIF	Public Safety Information Forum
PwDs	People with Disabilities
PWR	Pressurised Water Reactor
RA	Radio Analysis (Laboratories)
RadTom	Radiography and Tomography
RAPDASA	Rapid Product Development Association of South Africa
R&D	Research and Development
R&TD	Research & Technology Development
REAM	Research and Asset Management
RPTC	Radiation Protection Training Centre
RS	Radiation Science
SABS	South African Bureau of Standards
SADC	Southern African Development Community
SAFARI-1	South African Fundamental Atomic Research Installation
SAHPRA	South African Health Products Regulatory Authority
SAIW	South African Institute of Welding

SANAS	South African National Accreditation Standard
SANS	South African National Standard
SANEDI	South African National Energy Development Institute
SANReN	South African National Research Network
SAPS	South African Police Service
SARIMA	South African Research and Innovation Management Association
S&T	Science and Technology
SBAH	Steve Biko Academic Hospital
SCM	Supply Chain Management
SEA	Separation Element Assembly
SEC	Social and Ethics Committee
SHEQ	Safety, Health, Environment and Quality
SMMEs	Small, Medium and Micro Enterprises
SOC	State-owned Company
SOE	State-owned Entity
SR	Stakeholder Relations
SRTS	Sustainable-Return-to-Service
TB	Tuberculosis
TIA	Technology Innovation Agency
TOR	Terms of Reference
TTC	Trade Test Centre
UCOR	Uranium Enrichment Corporation
UCT	University of Cape Town
UOC	Uranium Ore Concentrate
USA	United States of America
VDR	Volume Reduction Facility
WHO	World Health Organisation
WIL	Work Integrated Learning
WITS	University of the Witwatersrand
WSRF	Waste Segragation and Repacking Facility
VMM	Visitor Management Module

1. GENERAL INFORMATION

ABOUT THIS INTEGRATED ANNUAL REPORT

1.1 NECSA'S ORIGINS



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 Mineral Resources and Energy (DMRE)
Country of incorporation and Domicile:	South Africa
Physical and business address:	Elias Motsoaledi Street Extension (Formerly Church Street West) R104 Pelindaba, Brits Magisterial District, Madibeng Municipality, North West 0240
Postal address:	PO Box 582, Pretoria 0001 South Africa
Telephone number:	+27 12 305 4911
Fax number:	+27 12 305 3111
Email address:	communication@necsa.co.za
Website address:	www.necsa.co.za
External auditors:	Auditor-General of South Africa (AGSA) 300 Middel Street, New Muckleneuk Pretoria
Bankers:	Nedbank Limited, 135 Rivonia Road, Sandown, Sandton
Company Secretary:	Fakazile Nyembe +27 12 305 4454 Fakazile.Nyembe@necsa.co.za
Enquiries regarding this report:	Precious Hawadi Acting Group Chief Financial Officer: Telephone: +27 12 305 5563 PreciousH@ntp.co.za

1.2 NECSA STRATEGY

STRATEGIC OVERVIEW

Our vision

To be a global nuclear and related technology leader, positively touching people's lives socio-economically.

Our mission

To develop and safely utilise nuclear, radiation and related technologies to make socio-economic impact in diverse global markets through commercial and non-commercial technologies, in an environmentally responsible manner.

Our values

Excellence, Accountability, Safety First, Integrity and Innovation (EASII).

Our strategy

Financially sustainable organisation with efficient operations and good governance:

- Financial recovery and sustainability
- Research and Innovation
- Profitable commercial enterprises
- Continuity and efficiency
- Talent excellence and high performance culture.

Mandate

To develop, utilise and manage nuclear technology for national and regional socio-economic development through:

- Applied Research and Development (R&D).
- Commercial application of nuclear and associated technology.
- Contributing to the development of skills in science and technology.

Legislative mandate

Necsa is listed as a Major Public Entity in the Public Finance Management Act (PFMA, Act 1 of 1999, Schedule 2). The company's legislative mandate in terms of Section 13 of the Nuclear Energy Act (1999) is to:

- Undertake and promote research and development (R&D) in the field of nuclear energy and radiation sciences and technology and, subject to the Safeguard Agreements, to make these generally available.
- Process source material, special nuclear material and restricted material, and to reprocess and enrich source and nuclear material.
- Cooperate with any person or institution in matters falling within these functions, subject to the approval of the Minister.

According to Section 14 of the Act, Necsa must execute institutional responsibilities on behalf of government, which include 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 viable fuel cycle facilities.
- Serve as the anchor for nuclear energy research, development and innovation in South Africa.

In October 2019, Cabinet approved the Integrated Resource Plan 2019 (IRP 2019). The IRP 2019 supports a diversified energy mix and includes a future additional nuclear capacity of 2 500 MW as a no-regret option. This IRP proposes that the nuclear power programme must be implemented at an affordable pace and modular scale (as opposed to a fleet approach) and take into account technological developments in the nuclear space.

Business model

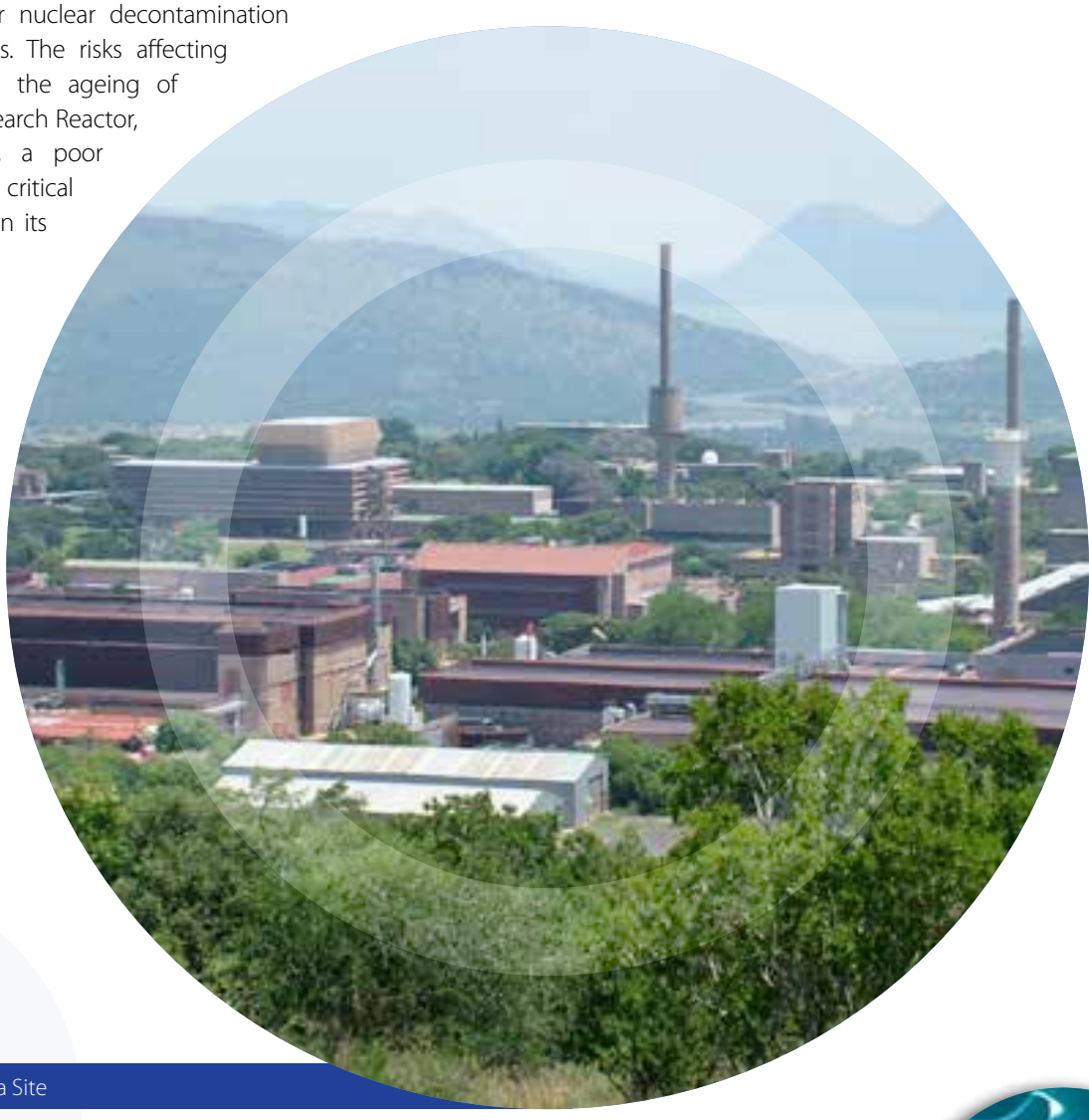
Necsa's business model leverages on the Group's knowledge base, legacy infrastructure investment and ongoing R&D in the fulfilment of the State's nuclear obligations and pursuit of commercial ventures. Necsa is significantly repurposing its strategic legacy investment to the benefit of South Africa and the global market. This includes use of its core facilities such as the SAFARI-1 Research Reactor for research and radioisotope production. Necsa receives financial resources through a government grant and commercial income to sustain the company's activities. These activities aim to fulfil country nuclear obligations on nuclear waste management, nuclear safeguards, proliferation obligation as well as education and training.

Necsa generates income through dividends and recouping costs of services rendered to its subsidiaries, NTP Radioisotopes SOC Ltd, which produces a range of radiation-based products and services for healthcare, life sciences and industry; Pelchem SOC Ltd, which supplies fluorine-based products into various industries; and Necsa division, Pelindaba Enterprises, which provides commercial nuclear engineering and manufacturing services.

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

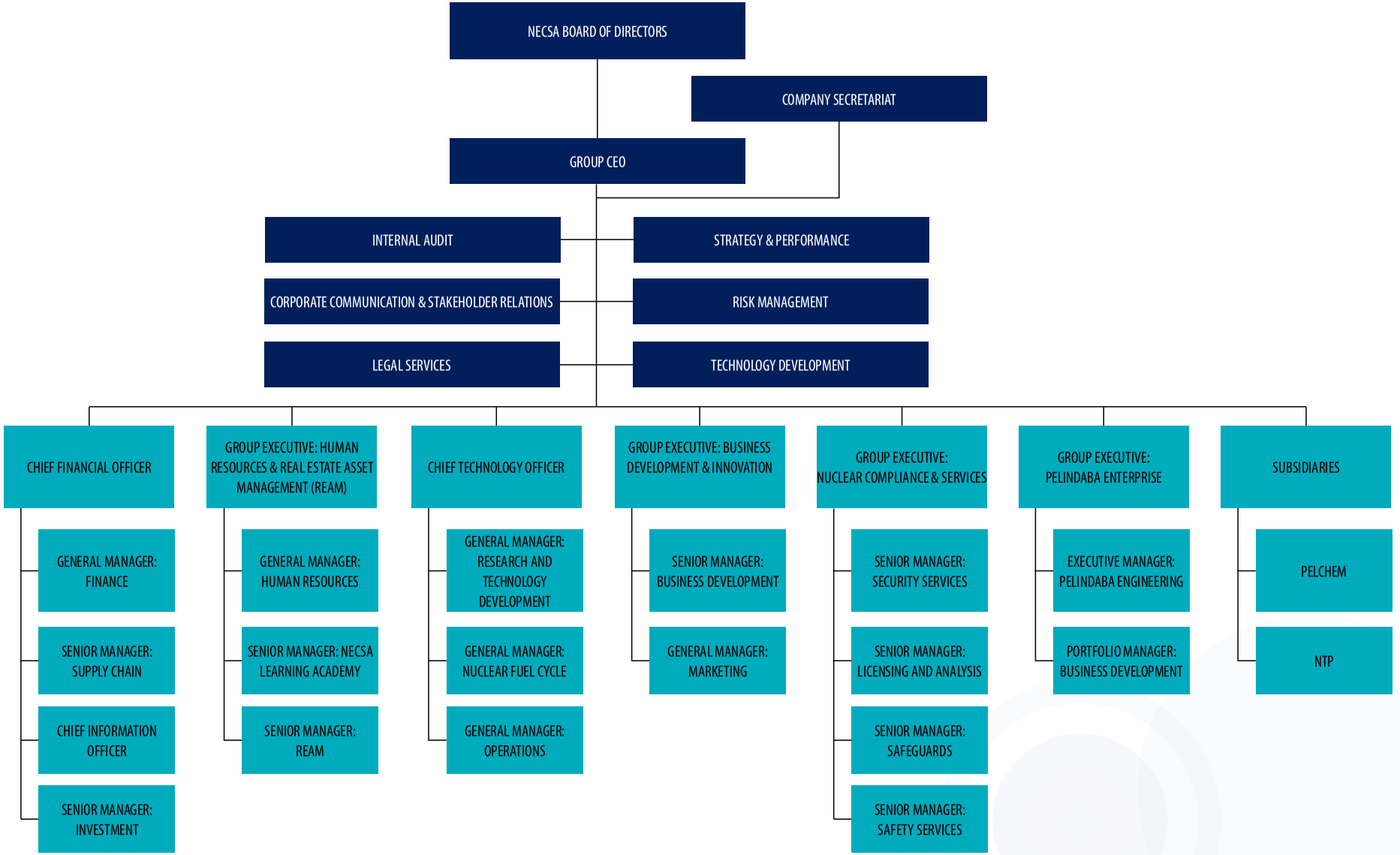
Necsa is the only South African entity legally allowed to process nuclear materials, with NTP overseeing an integrated radioisotope supply chain from source material and processing through to waste management.

Future opportunities for Necsa include product expansion by the subsidiaries, the design and construction of a replacement multipurpose research reactor for SAFARI-1 (MPR project), innovation and technology development from its R&D capabilities, opportunities arising from the nuclear new build programme, and the growing international market for nuclear decontamination and waste management services. The risks affecting Necsa's business model include the ageing of facilities such as the SAFARI-1 Research Reactor, a declining government grant, a poor performing economy, loss of critical skills and competitive dynamics in its commercial markets.



Necsa Site

1.3 ORGANISATIONAL STRUCTURE



2. FOREWORD OF THE CHAIRPERSON

Mr David Nicholls

Chairperson of the Board

Introduction

The Necsa Group is a world-leading nuclear technology organisation that adds significant value to the economy and quality of life of citizens. The organisation develops and utilises nuclear technologies to make socio-economic impact through materials beneficiation and commercialisation of technologies and through environmentally responsible application of core nuclear and related technologies. The Necsa Integrated Annual Report, for the fiscal year that ended 31 March 2021 is presented to all our stakeholders against a backdrop of significant challenges, mainly of a governance, financial, leadership, and management nature, which were faced by the organisation.

OVERVIEW

The year 2020/21 was the first full year of the tenure of the new Necsa Board which was appointed in February 2020. The Board assumed the leadership of the Necsa Group at a very challenging time when many State-Owned Entities (SoEs) were facing serious financial challenges. Necsa was no exception as it needed a turnaround onto a path of long-term financial sustainability. There was also a need to rationalise the Group to leverage synergies, efficiencies and reduce costs across the Group, whilst embarking on a sustainable growth. So the rationalisation process began and led to the development of a new operating model and business model. In the last quarter of the financial year a permanent Group Chief Executive Officer (GCEO), Mr. Loyiso Tyabashe, was appointed. The revision of the Group strategy and the rationalisation process are expected to be finalised in the 2022 finanical year.

This journey and process is a challenging one and it required that we pursued sustainability while ensuring that short term financial challenges were addressed to keep the organisation afloat, while transforming Necsa into a world-class, leading nuclear technology company. In this regard, as the Chairperson of the Board, 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.

During this time we rationalised the Boards of the holding company and subsidiaries to ensure more effectiveness, and the same was done with the Board Sub-committees. A new Group Strategy was developed which was focused mainly on growth driven by commercial projects, strategic impact area projects, and infrastructure projects to achieve long-term financial sustainability.

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 (NSI) 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, together with the executives, are dealing with Necsa turnaround and long-term financial sustainability. This is in the context of increased pressure on the organisation's financials, human and infrastructure resources due to a combination of rising operating costs, a declining government grant in real terms, ageing infrastructure, and pressure on non-grant revenue streams.

With that background, governance remains a high priority as well as going concern issues. These are being addressed through key strategic interventions including Balance Sheet rehabilitation. Among the activities involved is Uranium recovery from waste streams, volume reduction through compression of the waste in our Volume Reduction Facility (VDR), and processing of the waste through the soon to be commissioned Smelter Facility. All these activities will make a significant contribution towards the rehabilitation of our Balance Sheet. This is also important to make it easier to raise funding for our strategic growth projects.

OUTLOOK

Necsa is a key contributor to the future plans of the country in regard to 2.5GW nuclear new build. To that end we were mandated by the Department of Mineral Resources and Energy (DMRE) to work together with Eskom to transfer the Pebble Bed Modular Reactor (PBMR) to Necsa. The intention is to use the technology developed in the PBMR project to support Necsa and our country in entering the global supply chains of small modular reactors. The work to transfer PBMR to Necsa is in progress and is expected to be completed by the end of the 2022 financial year.

The organisation will review the sustainability of loss making areas of the business, so that serious decisions can be taken regarding possible exit from those areas of the business. We anticipate that global conditions will continue to be fluid. Such a state of affairs provides challenges, but it also provides great opportunities. The Board will continue to urge expansion into available markets while exercising the necessary caution.

ACKNOWLEDGEMENTS

Despite significant economic challenges and the impact of Covid-19, Necsa weathered the storm and still remains strong, 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 Mr. Ayanda Myoli who acted as GCEO since July 2019. I also extend our gratitude to Ms. Tina Eboka who retired as Managing Director (MD) of NTP after leading the entity back to sustainable recovery since it returned to full production. We wish her well for the future. I also wish the GCEO, Mr. Loyiso Tyabashe well in steering the organisation into the future and greatly appreciate Group Executive Committee (EXCO) for all its efforts.

The Board acknowledges the support and guidance from our Executive Authority, Minister Gwede Mantashe and the DMRE.

Conclusion

The South African nuclear industry looks forward to a bright future for nuclear technology and 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.

Mr. D Nicholls

Necsa Board Chairperson

3. GROUP CEO'S OVERVIEW

Mr Loyiso Tyabashe

Group Chief Executive Officer

Let me reiterate that the Necsa'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 and nuclear material.
- Cooperate with any person or institution in matters falling within these functions, subject to the approval of the Minister.

It is therefore imperative that Necsa, as the custodian of SAFARI-1 research reactor since 18 March 1965, contributes to knowledge domestically and globally through research and development and innovation. The past 56 years since SAFARI-1 went critical, has passed without any major safety incidents. SAFARI-1 also operates for more than 300 days per year, except during afore scheduled maintenance periods which are in sync with the medical isotopes production timelines. This is a globally acknowledged achievement complemented by world-rated scientists that use the reactor for training tertiary students and conducting research (see list of cutting edge scientific papers in renowned international publications).

It is for these reasons that Necsa forms part of a steering committee spearheading realisation of the Multipurpose Reactor (MPR). The MPR is intended to succeed the SAFARI-1 research reactor as it reaches the end of its economic lifetime. South Africa, through Necsa and its wholly owned subsidiary NTP Radioisotopes, has established itself as a leading global producer of reactor-based radioisotopes. Medical radioisotopes manufactured at Pelindaba include active pharmaceutical ingredients (APIs) such as Molidenum-99, Iodine-131 and Lutetium-177. The realisation of the MPR project will ensure South Africa remains among the top four global radioisotope producers as well as enabling continuation of research and development, on, and in the use of nuclear technologies. This retains and expands Necsa's path in providing much needed radioactive isotopes for medical and industrial applications, execution of materials research through beam line techniques, and jobs, which are all essential for our economy. The MPR pre-feasibility study was submitted to the DMRE to initiate the Gateway Review in line with National Treasury standards on 27 November 2020.

Necsa met 5 and exceeded 6 of its 24 key performance indicators (KPIs), while two KPIs were undetermined. The most noteworthy successes, beyond of the SAFARI-1 and MPR progress mentioned above, include the very low public radiation dose impact clearly upholding the 'safety first' value. The performance indicators not achieved related mainly to the financial performance of Pelchem, and Pelindaba Enterprises, low level of financing for strategic growth projects, as well as the Decommissioning & Decontamination (D&D) Programme. These areas will be the main focus in the upcoming financial year to ensure that adequate traction is achieved in these areas.

NTP continued to operate in full compliance with regulatory requirements with no unscheduled interruptions. Essential logistics were severely impacted by an almost total ban on international flights at the onset of the Covid-19 lockdown. However, NTP resorted to working with major airlines repatriating citizens. It was able to honour most orders particularly in the latter part of the financial year with revenue increasing by 21.5% from the 2019/20 financial year. At the heart of this was NTP's

integrated Sustainable Return to Service (SRTS) Programme that was launched in 2019/20. The SRTS Programme provided a framework to ensure the sustainable radiochemical operations of the business and allowed NTP to rebuild a reliable supply of key medical radioisotopes to local and global customers.

It is also noteworthy that all inspections carried out during the reporting period met the the International Atomic Energy Agency (IAEA) safeguard 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 2020 and were accepted as satisfactory by the IAEA.

In the 2022 financial year, Necsa will focus on a rationalisation and restructuring process aimed at maximising efficiencies, leverage synergies and efficiencies across the group, reducing cost of doing business and steering the organisation towards breakeven and sustained fluidity whilst addressing governance issues and positioning the organisation for growth through identified strategic projects. This process is broadly consultative with labour, staff, executives, key stakeholders and the shareholder. The preliminary work indicates a shift towards a centre-led corporate structure while certain business units will continue to be decentralised. There are currently strict austerity measures instituted aimed at reprioritising expenditure and containing wastage, with the overall goal of turning the financial performance around for sustainability.

The Necsa Group's primary focus going forward is to turn-around of the group. This will be done mainly in order to reduce operational costs for long-term sustainability. Specific growth prospects for the near future include:

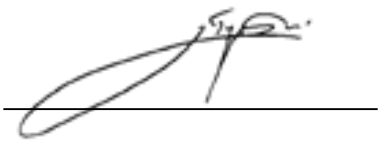
- Rationalization of the Necsa Group
- The multi-purpose research reactor (MPR) project to replace SAFARI-1;
- NTP's sustainable return to service programme, new NTP production capacity and business initiatives;
- U-recovery from waste streams;
- Leverage of D&D project;
- Nuclear new build programme in which Necsa will be instrumental in localisation and the nuclear fuel cycle;
- Transfer of PBMR from Eskom to Necsa;
- Expansion of the NTeMBI network and radiopharmaceutical clinical trials;
- Pelchem product line rationalisation, plant refurbishments, the Thuthukani project and the Ketlaphela project;
- Ageing Management of the Necsa site infrastructure;
- Further leverage of Necsa's intellectual property portfolio.

ACKNOWLEDGEMENTS

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

Conclusion

Necsa 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. Loyiso Tyabashe

Group Chief Executive Officer

4. HIGHLIGHTS OF THE 2020/21 FINANCIAL YEAR

- The SAFARI-1 research reactor performed excellently, under the circumstances, throughout the financial year under report (2020/21). During the Covid-19 pandemic it succeeded to support the stakeholders and, in particular, the radio isotope production facilities and continued with its record of safe and efficient service to users and the public since its first criticality in March 1965.
- Necsa developed a novel anhydrous fluorination processing route for neodymium trifluoride, which produces very little waste. The process was patented and Necsa has entered into a licensing agreement with a private company, who is busy with the scaling up of the process with the aim of eventual commercialisation.
- Necsa's Applied Chemistry Department is developing a novel processing route for lithium hexafluorophosphate. Two patents have already been obtained and more patent applications are being considered. The intention is to scale up the process to a commercial plant, to supply local and international markets. The laboratory phase of the research is mostly completed. To start the scaling up of the developed technology, a bench scale pilot plant was designed. The procurement process for the plant has started and it is envisaged that it will be commissioned towards the end of 2021. This project enjoys significant financial support from the Department of Science and Innovation (DSI).
- Necsa has patented a novel process based on gamma-emitting sources to aid in the detection of broken mining shrouds, which, undetected or poorly detected, may result in long downtime and associated opportunity costs in open cast mining. This technology has a strong potential for application in the mining industry for detection of broken or missing shovel shrouds. A detailed market study funded by Necsa's subsidiary, NTP Radioisotopes, was completed and has enabled the firming up of the value case for the technology. Funding campaigns are in progress to secure the required funding for technology development.
- 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. Neodynium fluoride is used mainly in the manufacture of permanent magnets for us in many commercial applications.
- The following staff members obtained their PhD degrees: Dr. Janine Suthiram obtained her PhD in Medical Nuclear Science from the University of Pretoria, Dr. Tshepo Ntsoane in Physics from the University of Pretoria and Dr. Jim Rapakgadi in Textile Science from the Nelson Mandela University.
- Prof Jan Rijn Zeevaart achieved a B2 Rating from the National Research Foundation (NRF), becoming Necsa's first B-rated scientist. He is among 11 current rated researchers at Necsa.
- The Research & Technology Development (R&TD) Division produced 43 contract research reports and 34 research publications during 2020/21.
- HR capacity building and talent management include a year average of approximately ten Radiation Science personnel enrolled for PhD studies and three enrolled for MSc. Three were awarded their PhDs and one an MSc. In addition, postgraduate support is given to two external PhD and two external MSc students, performing their studies at our radiation research facilities.

Necsa's Reseach & Technology Development (R&TD)

5. 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's Compact with the DMRE, the Corporate Plan and Performance Reports.

5.1 STATEMENT OF RESPONSIBILITY FOR PERFORMANCE INFORMATION

The Board, as an Accounting Authority, is responsible for implementing a system of internal controls to provide reasonable assurance in relation to the integrity of the performance information, human resources information and the annual financial statements. The Group Chief Executive Officer (Accounting Officer) is responsible for the preparation of Necsa's performance information and for its veracity. This Annual Report has been prepared in accordance with the guidelines issued by National Treasury and Annual Financial Statements in accordance with International Financial Reporting Standards (IFRS).

The AGSA has examined the company's AFS and Predetermined Objectives (PDOs) for the year ended 31 March 2021 and their report is presented on page 154. All information disclosed in this Annual Report is consistent with the AFS as audited by the Auditor-General.

In our opinion, the Annual Report fairly reflects the operations, performance information, human resources information and the financial affairs of Necsa for the financial year ended 31 March 2021.

5.2 AUDITOR-GENERAL'S REPORT: PREDETERMINED OBJECTIVES (PDOs)

The AGSA 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 PDOs is included in the management report, with material findings being reported under the ***Predetermined Objectives*** heading in this report. Refer to page 154 of this report for the Independent Auditor's Report on PDOs.

5.3 OVERVIEW OF PUBLIC ENTITY'S PERFORMANCE

5.3.1 Service delivery environment

Given Necsa's mandate relating to research and development and national nuclear obligations, the company is not directly involved in service delivery to the public. Salient issues from the external environment include:

- Due in large part to the Covid-19 pandemic, economic activity in the 2020 calendar year decreased by 7% compared with 2019 – the biggest annual fall in economic activity the country has seen since at least 1946.
- President Cyril Ramaphosa chaired a virtual inaugural meeting of the Presidential State-Owned Enterprises (SOEs) Council on 5 November 2020. President Ramaphosa appointed a panel to support government in ensuring the prioritisation of SOEs and to undertake a process of rationalisation.
- The National Energy Regulator (Nersa) received written comments and conducted a public hearing on the Minister of DMRE's determination on the proposed 2 500 MW of new nuclear power. Necsa made a submission on its position and GCEO, Loyiso Tyabashe made presentation to its panel.
- Legal challenges against Necsa are reported on page 246.

5.3.2 Organisational environment

A number of internal factors are notable in relation to Necsa's performance in the past financial year:

- By 31 March 2021, the Necsa Group had recorded 132 positive Covid-19 cases including 129 recoveries and three deaths. None of those were occupationally induced.
- The most significant organisational challenges continue to be loss of skills and decaying infrastructure. Repair of site infrastructure is becoming critical leading to increasing frequency of utilities breakdowns.
- A revised Group Corporate Plan for 2020/21 to 2023/24 was developed in alignment with a new Necsa Group Strategy Outline. The revised Corporate Plan was submitted to DMRE and National Treasury on 29 September 2020.
- On 1 January 2021, Mr. Loyiso Tyabashe assumed the position of GCEO. He has more than 20 years of technical and leadership experience in the South African nuclear industry.
- A Rationalisation and Restructuring Project Task Team was appointed to work with Letsema Consulting – Board contracted consultants – from 30 September 2020.

- NTP continued to operate in full compliance with regulatory requirements with no unscheduled interruptions. Essential logistics were severely impacted by an almost total ban on international flights at the onset of the Covid-19 lockdown. However, NTP was able to honour all of its orders and revenue increased by 21.5% from the 2019/20.

5.4 STRATEGIC OUTCOME-ORIENTATED GOALS

The Necsa Group has the strategic intent of commercial profitability by 2030. This is to be achieved by becoming a leading nuclear, radiation and fluorochemicals technologies organisation in the world. The Necsa Group Strategic Outline focuses on a ten-year horizon at the end of which the Group is to achieve R8bn in revenues. Intermediate goals are set for the short-term (12 months – 2021/2) to realise revenue of R2bn and for the medium-term (five years) to attain revenue of R5bn.

By 2030, Necsa Group aims to be a commercially profitable entity through:

- Achieving a 20% market share in the global nuclear radiochemical sector relating to nuclear medicine.
- Achieving a 1.2% market share and 6% profitability in the fluorochemicals sector.
- Implementing a phased development of technologies in the specific designated impact areas that aims at a net income of approximately R324m in the nuclear and radiation technology and associated fluorine chemistry sectors.

5.5 PERFORMANCE INFORMATION BY PROGRAMME

Performance against planned indicators and targets, as contracted in the Shareholder's Compact – 2020/21 (submitted September 2020) between Necsa and the Minister of Mineral Resources and Energy, is presented in the prescribed tabular format below.

Note that significant changes were made between the initial Shareholder's Compact for 2019/20 submitted in February 2020 and the revised version of September 2020 reported on here. The four former programmes:

- Nuclear Energy Programme
- Radiation Products and Services Programme
- Necsa as Host of Nuclear Programmes
- Cross-Cutting Programme

were replaced by:

- Commercial Programme
- Growth Initiatives Programme
- Infrastructure Programme
- Support Services and Compliance Programme.

In addition, the number of PDOs were increased from 12 to 24. Some of the former PDOs were abandoned, some retained or modified and various new PDOs introduced as described in the programme sections below.

Necsa's objectives are grouped into four strategic programmes:

COMMERCIAL PROGRAMME

The Nuclear Energy Act (1999), in sections 14(1) (a) and14 (2), provides for Necsa's commercial mandate through exploitation of technology and utilisation of business opportunities. The Commercial Programme brings together those Necsa functions that have proven customer bases and with potential to continue operating profitably or which can be expected to grow and become profitable. The three contributors to this programme are nuclear medicine and industrial isotopes (NTP SOC Ltd), fluorochemicals (Pelchem SOC Ltd) and nuclear and industrial manufacturing (Pelindaba Enterprises Division).

Apart from the new KPIs introduced at the end of September 2020, the following commercially related objectives were amended at the time compared to the Shareholder's Compact of February 2020:

- Abandoned: "Necsa Corporate financials - External Sales (incl. Intra Group Sales)".
- Changed: "NTP Group financials (Net profit after tax)" – Target: R36m to "Nuclear Medicine and Industrial Isotopes (Net

profit after tax)" – Target: (R85.6m).

- Changed: "Pelchem Group financials (Net profit after tax)" – Target: (R0.7m) to "Fluorochemicals (Net profit after tax)" – Target: (R51.6m).

Table 1: Commercial Programme: Performance indicators, planned targets and actual achievements

Key performance area	Key performance indicator	Actual achievement 2019/20	Planned target 2020/2021	Actual achievement 2020/2021	Deviation from planned target 2020/2021	Comment on deviation
Nuclear medicine and industrial isotopes	Mo-99 market share.	Not a PDO in 2019/20.	20%	20%	Target met.	
	Widen the range of medical radioisotopes.	Not a PDO in 2019/20.	4	4	Target met.	**Four products:** Mo-99, I-131, Lu-177 and F-18.
	NTP Group Revenue.	Not a PDO in 2019/20.	R990.6m	R917.19m	Target missed by R73.41m.	The number of suitable flights for radioactive exports remained limited coupled with the lower-than-expected demand from the market.
	Net profit after tax.	(R73.9m)	(R85.6m)	R32.39m	Target exceeded by R117.99m.	
	SAFARI-1 Operation: Operational availability (days per year).	302.87 days.	287 days	298.83 days	Target exceeded by 11.83 days.	

Key performance area	Key performance indicator	Actual achievement 2019/20	Planned target 2020/2021	Actual achievement 2020/2021	Deviation from planned target 2020/2021	Comment on deviation
Flourochemicals	Pelchem revenue.	Not a PDO in 2019/20 – was R136.9m.	R203.4m	R130.4m	Target missed by R73m.	Product unavailability due to breakdowns and procurement delays of sanitisers by government.
	Net profit after tax.	R62.9m)	(R51.6m)	(R67.76m)	Target missed by R16.16m	Unfulfilled orders as result of plant outages and utilities interruptions.
	Weighted average utilisation (production).	Not a PDO in 2019/20 – was 48.3%.	>95%	53%	Target missed by 42%.	Utilities interruptions.
	Weighted average availability (maintenance).	Not a PDO in 2019/20 – was 67.9%.	>86%	69%	Target missed by 17%.	Aged and unreliable plants leading to increased breakdowns/ downtime.
	Regulatory compliance (Licence to operate).	Not a PDO in 2019/20 – was 75%.	100% compliance	100% compliance	Target met.	
	(B-BBEE) level.	Not a PDO in 2019/20 – was level 6 but expired in Quarter 3 of the 2020 financial year.	4	No rating	Not determined.	No verification done due to the South African National Accreditation System (SANAS) prescribed 12-month period that lapsed for using audited AFS.
Nuclear and industrial manufacturing	Pelindaba Enterprises revenue.	Not a PDO in 2019/20,	R48.9m	R39.5m	Target missed by R9.4m.	Installation of the SEC Piping Project planned for the current year was rescheduled to the next outage later in 2021/22 financial year.
	Net profit.	Not a PDO in 2019/20.	R2.1m	(R14.7m)	Target missed by R16.8m.	Insufficient revenue generated.

GROWTH INITIATIVES PROGRAMME

Some of Necsa's identified projects for long-term sustainability require strong R&D involvement to increase technology readiness towards commercially viable products and services. The impact areas concerned are: Clean Energy, Medical Diagnostics and Therapy, Industrial Applications, Materials Beneficiation, and Nuclear Waste.

Apart from the new KPIs introduced at the end of September 2020, the following growth-related objectives were amended at the time compared to the Shareholder's Compact of February 2020:

- Changed: "Decontamination, Decommissioning and Waste Management of Disused Historical Nuclear Facilities (D&D programme) execution (Stage 1) (Execution of Annual Plan of Action as approved by DMRE)" to "Stage 1 D&D Programme Execution (D&D programme execution (Stage 1): Execution of Annual Plan of Action as approved by DMRE)" with target maintained at 100%.

Table 2: Growth Initiatives Programme: Performance indicators, planned targets and actual achievements

Key performance area	Key performance indicator	Actual achievement 2019/20	Planned target 20202021	Actual achievement 2020/2021	Deviation from planned target 2020/2021	Comment on deviation
Growth initiatives	Contract research revenue from R&TD.	Not a PDO in 2019/20.	R20m	R28.54m	Target exceeded by R8.54m.	
	Revenue from impact area projects.	Not a PDO in 2019/20.	R22.5m	R7.95m	Target missed by R14.55m.	The Covid-19 pandemic created an unfavourable climate for investment. The Industrial Development Corporation (IDC) and local pharmaceutical companies were approached but this has yielded no outcome yet.
	Research publications.	32	29	33	Target exceeded by 4 publications.	
	Innovation disclosures.	8	8	8	Target met.	
Stage 1 D&D Programme execution	D&D Programme execution (Stage 1): Execution of Annual Plan of Action as approved by DMRE.	88.67%	100%	27.01%	Target missed by 72.99%.	• COVID-19 lockdown had a negative effect. • Limited resources to implement the D&D plan.

INFRASTRUCTURE PROGRAMME

The Infrastructure Programme amalgamates initiatives characterised as capital investments vital to the long-term sustainability and growth of the Necsa Group. These share the commonality that they should be regarded as megaprojects implying unusually high levels of investment, complexity and risk. The contributors to the Infrastructure Programme are the MPR, Nuclear Power and Real Estate Asset Management (REAM) Masterplan.

Apart from the new KPIs introduced at the end of September 2020, the following infrastructure-related objective was amended at the time compared to the Shareholder's Compact of February 2020:

- Abandoned: "Establish sustainable supply of LEU fuel and target plates - Achievement of project objectives".

Table 3: Infrastructure Programme: Performance indicators, planned targets and actual achievements

Key performance area	Key performance indicator	Actual achievement 2019/20	Planned target 20202021	Actual achievement 2020/2021	Deviation from planned target 2020/2021	Comment on deviation
Multi-Purpose Research Reactor (MPR)	Framework for Infrastructure Delivery and Procurement Management (FIDPM) stage.	Not a PDO in the 2019/20 financial year.	Prefeasibility Study complete.	Report approved and submitted to DMRE for Gateway Review on 27 November 2021. Necsa has no control over the DMRE Gateway Review.	Target met.	
Pelindaba Masterplan	Support future infrastructure plans as well as commercialise for income generation.	Not a PDO in 2019/20.	Develop business plans and feasibility studies for the following districts: • The Nuclear Medical Tourism District. • The Solar Farm. • The River Park (social housing for Necsa Group employees mainly).	None.	Target missed.	Austerity measures.

SUPPORT SERVICES AND COMPLIANCE PROGRAMME

The Support and Compliance Programme consolidates functions related to the support of operations and compliance with regulatory requirements. Due to the highly technical nature of Necsa's activities, specialised technical support and maintenance are vital. In addition, a heavy burden of compliance has to be shouldered as a result of the Group's status as a SOC, as well as nuclear license holder. The contributors to this programme are:

- Research and Technology Development
- Maintenance, Utilities and Engineering
- Safety, Security, Health, Environmental Protection, Nuclear Licensing and Quality Management
- Nuclear Safeguards
- Analytical and Calibration Services
- Human Resources
- Finance and Information Technology.

Apart from the new KPIs introduced at the end of September 2020, the following support and compliance related objectives were amended at the time compared to the Shareholder's Compact of February 2020:

- Abandoned: "Staff composition -Technical staff as % of total staff".
- Abandoned: "Staff composition - Black technical staff as % of all technical staff".
- Changed: "Compliance to Safety, Health, Environment and Quality (SHEQ), license and other regulatory requirements [Disabling Injury Incidence Rate (DIIR)]" – Target increased from <0.7 to <2.0.

Table 4: Support Services and Compliance Programme: Performance indicators, planned targets and actual achievements

Key performance area	Key performance indicator	Actual achievement 2019/20	Planned target 20202021	Actual achievement 2020/2021	Deviation from planned target 2020/2021	Comment on deviation
Compliance to SHEQ, license and other regulatory requirements	DIIR	0.56	<2.0	0.27	Target exceeded by 1.73.	Reported over rolling preceding 12-month period.
	Public dose impact (expressed as % of National Nuclear Regulator (NNR) allowable limit).	1.596%	<20%	1.457%	Target exceeded by 18.543%.	Reported on calendar year basis i.e., Jan -Dec 2020.
HR management	Number of successors available for each critical position.	Not a PDO in 2019/20	A minimum of one successor for each core technical position.	Not available.	Not determined.	Talent mapping not started as performance appraisals not finalised.
	Percentage increase of Black females in middle management positions and higher.	Not a PDO in 2019/20.	10%.	Black females in this category at the end of last financial year was (66/331) = 19.94% and at the end of this year was (71/335) = 21.19%. Percentage increase is 21.19 -19.94 = 1.25%.	Target missed by 8.75%.	Moratorium on new appointments.

6. NECSA DIVISIONS AND KEY SUBSIDIARIES

6.1 GROUP FUNCTIONS

6.1.1 Company Secretary

Functions performed by the Necsa Group Company Secretariat include preparing the annual Board schedule of meetings, timeous distribution of correspondence, record keeping, preparing resolutions for meetings, and preparing draft Board and Board subcommittee minutes. The returns required by the Companies Act (Act 71 of 2008) were completed and lodged on time. The function is currently performed by Necsa Company Secretariat.

6.1.2 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.

6.1.3 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:

- Systems and Compliance Audit
- Corporate Governance and Ethics-related Audit
- Risk-based Performance Audit
- PDO Audit
- Information Technology (IT) Audit.
- Ad hoc Audits and Special Investigations.

6.1.4 STRATEGY AND PERFORMANCE

The **Strategy and Performance Department** supports the Necsa Group, and specifically the Office of the GCEO, in the following matters:

- Corporate Planning
- Performance Monitoring
- Competency for Quality Management
- Advisory function in Project Management
- Ad hoc matters assigned by the GCEO.

The Strategy and Performance Department documents the business strategy as developed by the Board, Group EXCO and ad hoc task teams. The strategy is combined with planning for the key programmes, a range of subsidiary plans as well as the Shareholder's Compact into the Corporate Plan submitted at the end of February each year.

Performance is evaluated against PDOs in accordance with the Shareholder's Compact concluded with the Minister of Mineral Resources and Energy. Quarterly reports – due for submission one month after the end of each quarter – contain quarterly progress against the PDOs. Quarterly reports also include narrative on each of the key programmes as well as all other reporting items as agreed with the Shareholder. Following the end of a financial year, an Annual Performance Report is produced for inclusion in the Necsa Group Integrated Annual Report. This details final performance for the financial year against the PDOs, as reflected under "Performance information by programme" on page 21-26.

The Strategy and Performance Department is also tasked with record keeping in relation to performance monitoring and responding to audit queries relating to the PDOs as detailed in the Performance Information Management Policy that it maintains.

Quality Management contributes to the Necsa Group's Integrated Management System and quality culture. Assistance is provided with strategic interventions related to management system improvements. Safety and security culture awareness for the Office of the GCEO is also undertaken.

6.1.5 CORPORATE COMMUNICATION AND STAKEHOLDER RELATIONS (CCSR)

CCSR's key role is to position the Necsa Group as a reputable organisation nationally, regionally and internationally through different communication platforms. The Unit, reporting directly to the office of the GCEO, consists of Communication (Internal and External) and Media as well Stakeholder Relations. Some of the functions within CCSR include hosting media briefings, strategic events, outreach programmes and Corporate Social Investment activities, respectively.

CCSR provides an advisory function in managing Necsa's reputation and, among others, helps executives of Necsa to prepare for media interviews. The Unit is also responsible for developing key messages which are aligned to 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 (Policy principle 14 – "Government shall create programmes to stimulate public awareness and inform the public about the nuclear energy programme, the Department strives for communications 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. Provide strategic marketing communication and stakeholder engagement support about nuclear, nuclear-related products, waste management and services to all stakeholders."

6.1.5.1 STAKEHOLDER RELATIONS

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. It is responsible for the Necsa Visitor Centre (NVC) that allows ordinary citizens an opportunity to experience the history of nuclear, the role played by nuclear technology in society, developments thereof and what Necsa entails. This is also a platform used to promote public awareness on nuclear and its applications.

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

Due to the effect of Covid-19, which have restricted public gatherings and closed off public places, SR could not conduct any event with regard to public engagement, such as outreach or in-house activities. Necsa only participated during level 1 of Covid-19 under strict regulation in the outreach called "The simple wonders of science" road show. The road show was organised by Brain Waves (a non-governmental organisation from Mamelodi, which aims to take science to learners in Mamelodi schools). The event was held in March 2021 and Necsa was the host. This was attended by 195 learners from the Impendulo, Emthunzinyanda and Ebukhosini primary schools.

INTERNATIONAL ENGAGEMENTS

The GCEO hosted the Republic of Korea delegation in February 2021 and the French embassy in March 2021.

STAKEHOLDER ENGAGEMENT

Public Safety Information Forum (PSIF)

The PSIF was established by Necsa, according to the DMRE, Regulation No 26112 as promulgated in the Government Gazette of 12 March 2004, as part of the National Nuclear Regulatory Act (NNR, Act 47 of 1999) as a holder of a nuclear licence. It is required that such meetings be held on a quarterly basis with the members of the community that live within a radius of 5 km from the nuclear reactor, but Necsa extends invitations to neighbouring residents, such as Atteridgeville that is 15 km away.

The new Chairperson and Deputy Chairperson were independently appointed by the NNR, during the 2020/21 financial year. The last face-to-face PSIF was held on Saturday, 7 March 2020. The April, June and November meetings for the 2020/21 cycle were cancelled due to Covid-19. Stakeholders received quarterly updates presentations. A virtual PSIF meeting that was arranged for 6 March 2021, did not take place as it failed to form a quorum.

Necsa Women's Day celebrations

The 2020 Women's Day function was held virtually on 31 August 2020. The Necsa webinar was addressed by the Deputy Minister of Communications, Ms. Pinky Kekana. About 260 participants managed to log on to the webinar which was held via the MS Teams meeting platform.

Staff information sessions (Town hall sessions)

The Group CEO, Mr. Loyiso Tyabashe hosted his first town hall session in January 2021 which was held virtually on MS Teams due to Covid-19 protocols. About 400 employees managed to log on and attended the session. CCSR organised the Burning Platform Restructuring Workshops (Management and labour unions) – the first one was held in February and the second in March 2021.

6.1.5.2 CORPORATE COMMUNICATION AND MEDIA LIAISON

Corporate Communication and Media Liaison is responsible for internal communication, external communication as well as Necsa corporate brand identity. Internal communication ensures that there is an information sharing culture within Necsa and encourages two-way flow of communication between employees and management. External communication via different platforms creates public awareness and brand image positioning for Necsa.

On the internal communication front, Necsa implements daily internal communication via email (Necsawide) and bulk SMS to share important information with the employees. In addition, there is a monthly newsletter from the GCEO's desk as well as a generic quarterly newsletter (***Necsa Today***) with business-related news that is shared with staff.

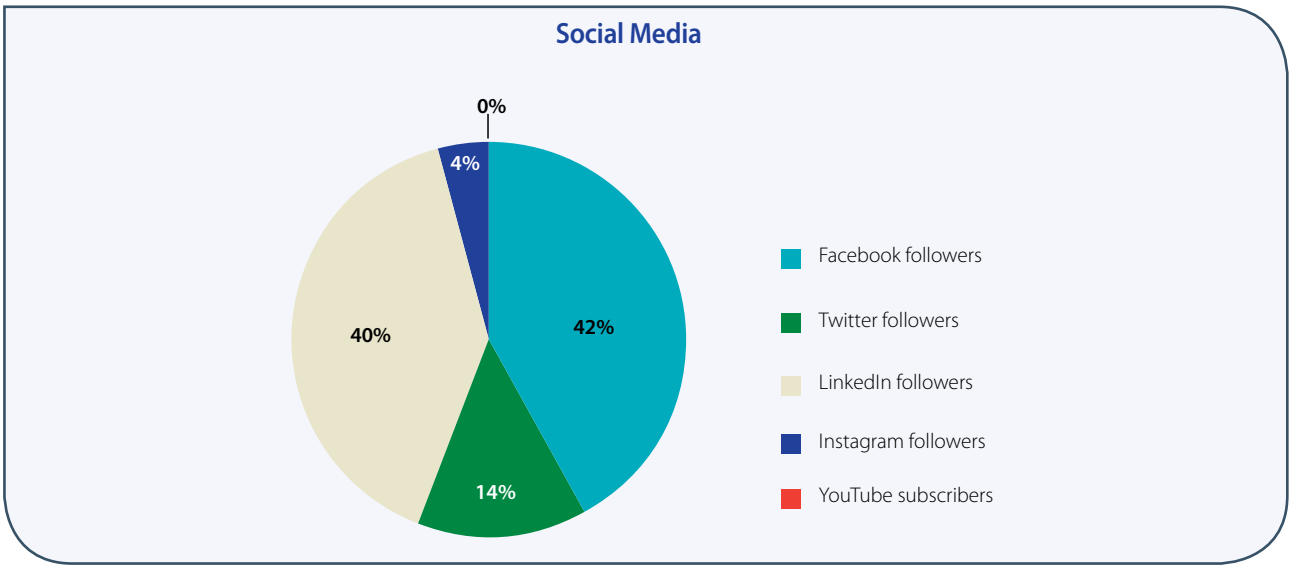
Internal Communication

Necsawide (E-mail)	*Necsa Today* (Internal newsletter)	GCEO Task Team & Communique
Daily	4	4

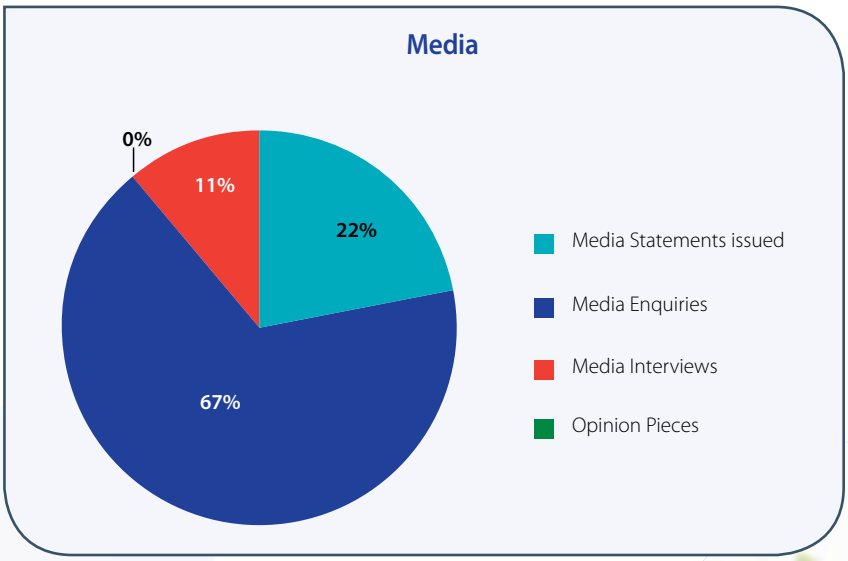
The Necsa website forms part of the external communication platform and it has embedded interactive pages where the public can engage or request information from Necsa. The website traffic is monitored monthly to observe which pages are visited the most and how can they be enhanced.

The media strategy for 2020/21 was to only engage indirectly using opinion articles so as to recover from reputational damage suffered the prior years. The appointment of Necsa's GCEO sparked interest with the various media houses, who constantly send requests for interviews with him regarding the vision he has for the Necsa Group. This will be allowed with time as the strategy gets approved and implemented.

Social media has become a common work tool for Necsa to influence and spread key messages of its brand identity. The social media platforms are mainly used to communicate information relating to important milestones and engaging the public on topical scientific issues. These remain important in creating awareness and educating the public on different applications of nuclear technology. Social media also plays a crucial role in marketing and preserving the positive image of Necsa's brand. Necsa's social media following continues to grow gradually. The growth in Necsa's social media statistics is shown below:



Below is the statistics on media engagement:



6.2 CHIEF TECHNOLOGY OFFICE

6.2.1 SAFARI-1

The SAFARI-1 research reactor is one of Necsa's key nuclear facilities. 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 R&TD Unit for research and training, neutron diffraction, and neutron activation analysis facilities.

The SAFARI-1 research reactor performed excellently, under the circumstances, throughout the financial year under report (2020/21). During the Covid-19 pandemic it succeeded in supporting the stakeholders and, in particular, the radio isotope production facilities and continued with its record of safe and efficient service to users and the public since its first criticality in March 1965.

SAFARI-1

Operational schedule

The reactor's operational availability was **298.83** days against the target of **287** days, which represents an operational availability utilisation level of **104.25%** of planned operation during 2020/21 at an average reactor power of 20.04 MW. The accumulated Megawatt Hours (MWh) for SAFARI-1 operational lifetime until end of March 2021 is 4 368 335 MWh since its first operation in 1965.

The reactor engineering support related to core and fuel management achieved good fuel economy and utilisation. A spent fuel shipment campaign was successfully completed during 2020/21 financial year, in which 100 Spent Fuel Assemblies were transferred to the Thabana Pipe Store. The reactor operational safety has been maintained during the full operational cycle within the safe operational technical specification limits during this year.

SAFARI-1 Plant Health Assessment and justification for a revised accumulated power limit on the SAFARI-1 Reactor Vessel Life Time (neutron irradiation effect) reports were submitted to NNR and approval was granted for both the revised safety assessment, and Operational Technical Specification. The Plant Health Assessment, which will also support the justification for continuous safe operations of SAFARI-1 operation beyond 2030 progressed well. Phase 1 (reactor vessel assessment) and Phase 2 (biological shield concrete assessment) were completed and submitted to the NNR. In Phase 3 (which includes the related safety items for categories 1, 2 and 3 structures, systems and components), the assessment reports are currently under internal review at SAFARI-1. Once finalised, it will be submitted to the NNR for information. These assessment reports provide valuable information that can be used to infer a reasonable estimate of the remaining service life of the reactor's main structures, systems and components to ensure continuous safe operation.

After reconciliation of the storage space availability, the capacity of both the Thabana Pipe Store and SAFARI-1 storage pool creates a high risk of termination of the operation of the reactor beyond May 2023 if the extension project of the Thabana Pipe Store is not completed.

SAFARI-1 OPERATIONAL PERFORMANCE

Reactor maintenance and refurbishment

The ageing management programme progressed well in some areas but projects related to instrumentation and control progressed slower than expected due to a lack of resources as a result of the austerity measures applicable to Necsa's facilities, lack of project management infrastructure, as well as a lack of instrumentation and control engineers to support the implementation and commissioning of systems.

All routine operational maintenance programme task requirements were completed as scheduled which is critical for the safe and reliable operation of the reactor.

Technical collaboration

No technical collaboration between meetings were held during the 2020/2021. However, regular communication was done to support technical collaboration between SAFARI -1 (South Africa), HFR & Pallas (NRG - Petten, The Netherlands), and the OPAL reactor (ANSTO, Australia) where valuable information was shared on topics related to reactor operations, engineering and SHEQ. Furthermore, the assistance provided during the year between the three reactors, as well as the newly-planned reactor Pallas, with regard to operational and safety matters, as well as the vessel life time assessment that was performed at the HFR Petten reactor, was a significant contribution to justify the safety margin on the revised accumulated power limit of the SAFARI-1 Reactor Vessel for continuous safe operation until 2030 or beyond.

Quality safety and environmental management

The SAFARI-1 research reactor successfully maintained certification of the International Organisation of Standardisation (ISO) 9001: 2015 and ISO 14001:2015 and the Occupational Health and Safety Series (OHSAS) 18001. The SAFARI-1 safety indicators showed a total injury rate and disabling injury incidence rate of zero for a second year which has so far been maintained for more than 741 000 man hours. The SAFARI-1 safety culture programme assessment concluded a good safety culture among SAFARI-1 employees.

6.2.2 ANALYTICAL AND CALIBRATION SERVICES (ACS)

Analytical and Calibration Services (ACS)

Analytical and Calibration Services (ACS) operates within Necsa Laboratories providing analytical, calibration, nuclear forensics and radiation protection consultancy services to internal and external customers. The main function of the ACS is to provide third party quality assurance with respect to products and services 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 scientist and technicians. The Marketing and Development Support (MDS) group is responsible for new services and products development, customer relations management and support the laboratories with expansion of scope of existing services, quality and safety management projects.

The scope of services for ACS includes:

- Measurement of natural and man-made radionuclides using radio-analytical techniques based on the emission of ionising radiation. These techniques includes gross alpha/beta counting, liquid scintillation analysis, neutron activation analysis, gamma spectrometry and alpha spectrometry.
- Analysis of the chemistry of materials using instrumental techniques such as gas chromatography (GC), liquid chromatography, Inductively Coupled Plasma Mass Spectrometry (ICPMS), and X-ray fluorescence spectrometry.
- Calibration and metrology of radiation protection monitoring instruments and equipment as well as the provision of radiation protection services which includes (among other things) conducting radiation surveys, site clearances, inspections and sampling.
- Supporting the non-proliferation as well as well as law enforcement agencies with criminal investigations involving nuclear materials found out of regulatory control, the temporary storage of police nuclear material evidence, the building of national nuclear forensics database library at Necsa, as well as the regional and the international cooperation and collaborations aimed to develop and optimise human capabilities and infrastructure for nuclear security.
- The innovation and development of new commercially viable products and services; marketing of existing products and services; acquiring external support/funding for services improvements; responding to applicable tenders and quotations for non-routine clients requested services; supervising scientists and guiding of non-routine sample analysis; help with troubleshooting of malfunctioning instruments and maintaining of equipment and the management of customer accounts.

The markets serviced includes agriculture and food testing services, water and environment analyses services, nuclear forensics analyses services, material and product testing services, calibration and metrology services. The majority of samples reporting to ACS labs are for testing of:

- Drinking water samples to establish fitness for human consumption.
- Environmental samples (including waste waters) to establish compliance to applicable regulatory requirements.
- Occupational samples to ascertain that there is no uranium in urine.
- Food and beverages samples to detect potential presents of contaminants of interest such as heavy metals.
- Raw materials and finished products against specifications which may include analysis of moisture content and purity of the material, etc.

Highlights

ACS remained open and continued providing essential sample analyses during the hard lockdown of Covid-19 alert level 5 but the lockdown impacted negatively on the activities of the laboratories. Backlogs were experienced across the entire value chain from samples registration, through laboratory processing and invoicing. The following companies are among those that assisted with essential sample analyses during the level 5 lockdown: Department of Water and Sanitation (DWS) on water, Pelchem (HF, hand sanitiser), NTP (Lutetium, tin), Gijima (elements in dust and soil), Onderberg Verwerkingskooperasie (heavy metals in fruit products), SGS (ethanol in fruit juice), and AMKA (hand sanitiser).

PARTNERSHIPS WITH INTERNATIONAL AND NATIONAL INSTITUTIONS

Meetings were held with Applied Chemistry (Delta F) to formulate the analytical requirements for testing of samples taken at different points in the production process of the envisioned LiPF6 pilot plant. The laboratories will be able to conduct a majority of these tests with current capabilities.

ACS has standing partnerships to perform specialist forensic analysis infrastructure enhancement and analytical methods development with international scientific organisations such as the IAEA, as well as the Lawrence Livermore and Los Alamos National Laboratories in the USA. A Gamma Spectrometer and accessories, as well as ICPMS spare parts were donated by the USA's Department of Energy National Nuclear Security Administration in support of the analytical capacity building of the South African Nuclear Forensics Programme were received and successfully installed. Configuration of the gamma spectrometer accessories is delayed because of the pandemic.

The RL14 laboratory could not obtain further samples in April and May 2020 due to the impact of the Covid-19 pandemic. The Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO) resumed submission of samples from June 2020 until March 2021.

INNOVATION AND CAPACITY BUILDING

The ACS established Innovation and Business Growth Services (team comprising of senior scientists with Managing Directors spearheaded and drove new product development and growth of existing business service). Some new business ideas conceptualisation in the broad areas of Food and Agriculture, Chemical Forensics, Health and Safety, and Environmental Management have been prepared and gone through the review processes. During the reporting period, ACS developed two business concept proposals. Five fact sheets were published and five more were reviewed and readied for production.

A manual quotation process involving the use of open source software and discrete SharePoint functionalities is being piloted for implementation as an interim measure while the laboratory is working on the sourcing and implementation of CRM software. This has an excel register for use in tracking and monitoring performance. The open source is also adapted for use in Job registration (Job Card) and requests for invoicing.

CUSTOMER SATISFACTION

ACS successfully completed WAVE 1 of the online customer satisfaction survey initiated during the year under review. Customers with registered active accounts participated in the survey and provided reasons for rating specific services as either satisfactory or not satisfactory. The laboratory's overall customers rated customer satisfaction as higher than the set target of 80% overall customer satisfaction. The laboratory's overall turnaround time from receiving of customer samples or equipment to delivering analysis reports or calibration certificates was rated to be unsatisfactory by the majority of the customers. The easy delivery of the customer samples/equipment to the laboratory and the communication of job progress statuses are two of the other indicated areas of concern by more than 10% of both internal and external customers. ACS incorporated turnaround time, customer updates and site delivery access challenges in its corrective action plan to aid customer retention efforts.

QUALITY ACCREDITATIONS

Three out of four laboratories (i.e. RA, CAL & PAL) are SANAS accredited in terms of ISO/IEC 17025 requirements and a process to accredit the remaining lab (NFP) is underway.

PAL is accredited for trace elements and physicochemical parameters in a wide variety of matrix samples including but not limited to drinking, borehole, environmental and sewage effluent water as well as gases. 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.

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).

Annual internal audits were conducted for the three labs, i.e. PAL, RA and NFP using the services of an external consultant. The main purpose of these internal audits was to verify level of compliance of the laboratory against the newly-promulgated version of the ISO/IEC 17025: 2017 standard. The outcome of the internal audit indicated that all the three labs are meeting more than 80% of the prescribed requirements. One lab which could not be assessed in the 2021 financial year will be completed in the 2022 financial year.

PROFICIENCY TESTS

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

Table 5: Proficiency test scheme % compliance of results

Laboratory	Proficiency scheme	2020/2021	2019/2020	Status
Radio-analysis laboratories	CTBTO proficiency test exercise	None	100%	(i)
	IAEA-ALMERA proficiency test on the determination of radionuclides	68%	73%	↓(ii)
	US Department of Energy's IARMA	100%	100%	↔
	PROCORAD Radio-toxicological inter-comparison 2020	56%	95%	↓(ii)
	MAPEP 2020	88%	90%	(iii)
	NPL 2020	None	67%	(iv)
	Ad-hoc 2020	None	75%	
Pelindaba Analytical Laboratories	South African Bureau of Standards (SABS) Group 1 analysis of heavy metals in water (including Uranium)	86%	33%	↑(v)
	SABS Group 2 analysis of nutrients in water	67%	100%	↓(vi
	SABS Group 3 analysis of major constituents in water	80%	100%	↓(vii)
Nuclear Forensics Laboratory	SABS Group 1: Uranium analysis and heavy metals in water	72%	45%	↑ (viii)

(i) The Proficiency Testing Exercise was cancelled by the CTBTO for 2020 due to the errors with the received samples and documents from the organisers.

(ii) Low scoring on PROCORAD and IAEA-ALMERA studies are because of the alternative instruments used as the detector for routine operations are defective.

(iii) The MAPEP study is not comparable against the previous reporting period in that each year different matrixes are used. The laboratory objective of 80% has, however, been exceeded.

(iv) No Proficiency Test scheduled for 2020/21 financial year.

(vi & vii) The reasons for not achieving z-scores < is that the ICP-MS 7700 experienced problems and SABS had problems with delivery of the samples timeously.

The Calibration Laboratory (CAL) did not participate in any inter-laboratory comparison studies or Proficiency Studies during this financial year because of budgetary constraints to cover National Laboratory Association (NLA) costs who are the organisers of the Proficiency Test Scheme.

QUALITY TRAINING

ACS managers, section heads and scientists received online awareness training on the Quality Management System based on ISO/SANS 9001:2015. This training, conducted by SABS, was organised in preparation for the implementation and certification of the ISO 9001-2015 Quality Management System for the ACS Department.

KEY-METRICS

Growth rate

ACS experienced delayed cost recoveries because key personnel to perform internal cost recoveries from both Finance and ACS were not available during most part of the Covid-19 hard lockdown period to do timeous invoicing. A decline in growth of customers was registered in all the market sectors with an insignificant decline only in the agriculture sector.

Table 6: Organic growth

Sector	Q1	Q2	Q3	Q4	FY 20/21	FY 19/20
Mining & Minerals Processing	16	23	28	32	**99**	**176**
Manufacturing	21	30	33	29	**113**	**129**
Government	11	14	13	13	**51**	**82**
Health Care	3	5	4	3	**15**	**52**
Agriculture	12	15	51	41	**119**	**121**
Consulting	8	14	11	24	**57**	**227**
Other Labs	6	10	10	10	**36**	**11**
Educational Institutions	0	1	2	2	**5**	**5**
TOTAL customers sold to	**77**	**112**	**152**	**154**	**495**	**803**

Productivity (number of samples processed)

The laboratory productivity could not meet target sales for all the financial year (i.e. all four quarters). The majority of customers were under lockdown and were unable to submit samples for analysis.

Table 7: Productivity Outlook

Samples processed	Q1	Q2	Q3	Q4	2020/21FY	2019/20FY
Samples processed						
Target	14 700	22 644	14 166	22 540	**74 050**	**91 198**
Actual	3 880	7 597	10 538	9 062	**31 077**	**69 944**
% Difference	-279%	-198%	-34%	-149%	**-138%**	**-30%**
Methods, validations & procedures published						
Target	**9**	**19**	**15**	**19**	**62**	**136**
Actual	**11**	**10**	**35**	**6**	**62**	**125**
Variance	**2**	**-9**	**20**	**-13**	**0**	**-11**

Improvement projects

ACS has identified laboratory processes that can be optimised or improved, as well as new service that can be added to existing scope in order to increase its revenue. The other aim was to optimise sample throughput and increase profit margins through improved infrastructure, an updated business Strategic Plan and more cost-effective marketing and sales processes. Six key projects (shown in Table 8) were identified and executed in a phased manner with durations varying between one to five years, depending on their complexity.

Table 8: Improvement projects

Laboratory	Project name	Start date	Target date	Review date	Status
Calibration Laboratory	Radon Instrument Calibration Laboratory in B-C5	Mar-16	Jul-18	Sep-21 (a)	In progress
	Relocation from V-X1 to B-C5	Apr-15	Aug-17	Jul-20	Completed
	X-Ray Inspection Body	Jun-17	Aug-18	Nov-20 (b)	On hold
	The design of a radon gas monitoring instrument	Nov-17	Mar-19	Mar-21 (b)	On hold
Nuclear Forensic Programme	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	Sep-21 (c)	In progress
	Building and application of a Nuclear Forensics Database Library of Uranium Ore Concentrate (UOC) materials	May-17	Jun-19	Jun-21 (d)	In Progress

a) Project specifications and plan have been re-worked in order to meet customer needs. Certain design features of the chamber had to be re-configured.

b) The two projects have been put on hold due to unavailability of both human and financial resources.

c) The delay for the completion of the project was caused by the 2020 internal audit findings that could not be addressed on time due to the national lockdown caused by the Covid-19 pandemic.

d) The delay for the completion of the project is caused by insufficient data that has been collected for the database and unavailability of a computer application to secure and query the database.

6.2.3 NUCLEAR WASTE AND LIABILITIES MANAGEMENT (NWLM)

Nuclear Liabilities Management (NLM)

NLM has been established to discharge nuclear liabilities of past strategic nuclear facilities.

The Decommissioning & Decontamination (D&D) programme involves the dismantling, decontamination, and decommissioning of the related nuclear facilities, the management of all historical nuclear waste as well as waste generated during the decommissioning of these facilities.

The D&D work carried out by Necsa has since year 2000 been funded through Necsa budget appropriation as well as a special Ministerial allocation (ring-fenced funding) in line with the 2004 NLM Plan.

Cabinet approved the 2004 NLM Plan and divided the total nuclear liabilities (nuclear and related chemical facilities) into three major stages. The approved funding was for nuclear liabilities of Past Disused Strategic Nuclear Facilities, as a ring-fenced allocation to Necsa. The three major stages as follows:

Stage 1: Decommissioning and waste management of all disused historical nuclear facilities.

Stage 2: Decommissioning and waste management of all remaining (currently operating) nuclear facilities.

Stage 3: The disposal of certain long-lived and high-level waste (including SAFARI-1 spent fuel) when an appropriate disposal facility for such waste become available.

Decommissioning services

The Decommissioning activities are divided into three phases:

- Phase 1: It entails the removal of source material and partial dismantling of the process system.

- Phase 2: Dismantling of process system and decontamination of the facility.
- Phase 3: Further decontamination/ cleaning of the facility to achieve the decommissioning end point.

Decommissioning services

Decommissioning activities during the 2020/21 financial year focused mainly on the following projects:

- **Phase 2 Decommissioning of Area 14 oil basement**

The cutting of the oil pipes into smaller sections progressed well and the project target set for 2020/21 financial year was achieved.

- **The de-heeling of UF6 cylinders in Area 27**

This project is progressing slowly due to the slow cylinder washing process, challenges experienced with the delivery of the nitrogen gas deliveries as well as the aging of the equipment and related infrastructure. There was a challenge with the cleaning of the contents of some population of the cylinders, which needs to be investigated. It was decided that upgrading the facility is not feasible because only a few population of cylinders remain to be de-heeled before the project is completed.

- **Phase 2 Decommissioning of the Conversion Facility**

Comments were received from the NNR for the submission of the Hazard Assessment and Decommissioning Strategy with regard to the collection of all loose material (pre-decommissioning activities) under cover letter NIL10B0027 and NIL10B0028 respectively, dated 13 December 2019. These comments necessitated the revision of the project schedule and a new strategy that is being developed on the use of localised ventilation in decommissioning the facility. These comments were addressed and submitted to the NNR. A separate project was registered to investigate the use of a localised portable ventilation.

- **Phase 3 Decommissioning facilities**

(i) Building P-2800

The building was previously used as a pilot UF4 Production Plant but operations ceased in 1985. During 2002 and 2003, Building P-2800 was used by the Metox facility and an oven was installed for the high melting temperature of zirconium sand. This oven was never commissioned. All equipment was removed from the facility in 2004 and the facility is currently in a state of care and maintenance.

The objective of this Phase 3 D&D Decommissioning Project is to take the facility out of the regulatory control or for future limited reuse.

Currently, RP Characterisation planning is underway and Decommission Strategy and Hazard Assessment is being developed for submission to the NNR for authorisation approval.

(ii) J-Building

Building was previously used:

- For accommodating two prototype Y-Plant cascade stages.
- For early surface fluorination tests on components.
- As a Separation Element Assembly (SEA) test facility.

Phase 2 decommissioning on J-Building was completed mid-2001 and the facility is currently in a state of care and maintenance.

The objective of Phase 3 D&D project is to first take J-Building out of the regulatory control and then to demolish the facility.

Currently, RP Characterisation planning is underway and the Decommission Strategy and Hazard Assessment are being developed for submission to the NNR for authorisation approval.

(iii) XB Building

Building XB was used to test the efficiency of newly-built and decontaminated Separating Element Assemblies (SEAs) using UF_6 (nat) as a process gas. Phase 2 decommissioning has been completed in 2001 and Building XB is currently under care and maintenance. The objective of this Phase 3 D&D project is to take the facility out of regulatory control. The Decommission Strategy and Hazard Assessment were submitted to the NNR for authorisation of the Phase 3 D&D activities - NNR comments and approval is awaited.

- **Decontamination of the P-1600 Actinide lab glove boxes**

This project involves the decontamination/cleaning of the glove boxes in lab R38 in Building P-1600. The lab was historically used for processing or operation involving the handling of Plutonium (Pu-239) based chemicals and related radionuclide materials and solutions. The laboratory and glove boxes still contain some of the chemical solution from the historic operation and some of the waste is still stored in the facility. A project plan and schedule has been approved for the D&D activities. Procurement of specialised carboys for handling the waste is being considered and training D&D personnel on applicable cleaning procedures is underway. An NNR submission will be made soon requesting authorisation of the planned activities.

- **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 authorisation) are inspected and monitored (radiologically) as scheduled.

Table 9: Below are the facilities under care and maintenance:

FACILITIES	FACILITY DESCRIPTION	CURRENT STATUS	COMMENTS AND ANTICIPATED DECOMMISSIONING ACTIVITIES
Building P 2700 A	Metox Pilot Plant.	Decommissioning preparation work was completed end of February 2010. Decommissioning was completed in December 2011.	Facility currently under care and maintenance licence.
Area 14 Oil Basement	Redundant enrichment process facility.	The cutting of pipes was completed in 2019. The current phase is the removal of all the waste and clean the facility.	Equipment will be cut to size and shorted for the processing in the proposed smelter and other decontamination techniques will be investigated.
Area 16	Redundant enrichment process facility used for the LEU blending for the decommissioned semi-commercial enrichment plant. Redundant enrichment process cylinder storage facility.	Area 16 plant is under care and maintenance.	Decommissioning of facility awaiting approval of smelter to enable processing of redundant equipment. No additional processing (for example, size reduction) planned currently due to limited storage area for cut equipment.
Area 27	Redundant enrichment process facility used for transfer of UF_6.	De-heeling of UF_6 is licensed and progressing according to schedule.	De-heeling project estimated to be completed 2014 and area could be utilised by NFC.
C Building	Redundant enrichment process facility.	Facility under care and maintenance.	Facility controlled under care and maintenance programme.
CaF_2 pans (six)	Evaporation of contaminated liquids.	Facility under care and maintenance	Utilisation and Remediation Strategy for Thabana Complex was submitted to the NNR. The remediation of the CaF2 pans is included in the scope of the strategy which is awaiting approval by the regulator (NNR). Note: The Thabana Complex, as per the Nuclear Installation License (NIL-04), consists of Thabana Pipestore, Thabana Radioactive Waste Storage Facility, Thabana Containerised Radioactive Waste Storage Facility and CaF2 Ponds.

FACILITIES	FACILITY DESCRIPTION	CURRENT STATUS	COMMENTS AND ANTICIPATED DECOMMISSIONING ACTIVITIES
D Building	Redundant enrichment process facility.	Hot and cold cutting activities are authorised by the NNR.	Facility will only be scheduled for decommissioning once all other facilities have been decommissioned due to utilisation of areas during the decommissioning of other facilities.
Dorbyl Area	Storage of redundant equipment and waste.	Facility under care and maintenance.	Facility operated under care and maintenance programme.
Evaporation Pans 1 - 5 & 6	Effluent/sludge storage facilities.	Facility under care and maintenance.	Facility operated under interim care and maintenance arrangements. A care and maintenance plan is scheduled and will be submitted to the NNR by the end of July 2021.
J Building	Redundant enrichment development/pilot plant.	Facility under care and maintenance.	Facility currently under care and maintenance.
Conversion Plant	Redundant uranium conversion plant.	Facility awaiting Phase 2 Decommissioning. Feasibility studies and procurement options are being considered for the use of a localised portable ventilation system.	Decommissioning preparation activities have not yet started and a reapplication of Decommissioning without ventilation was submitted in 2017. Schedule is updated to reflect status of the project.
U - Plant Area 74 Labs	Redundant laboratories for conversion plant.	Facility under care and maintenance.	Facility currently under care and maintenance.
XB Building	Redundant SEA development/ testing facility.	Facility under care and maintenance.	Facility currently under care and maintenance licence.
P 2900 (building only)	Redundant conversion process development/pilot plant.	Facility under care and maintenance.	Facility currently under care and maintenance licence.
E Building	Redundant enrichment plant - later used for MLIS development (also terminated).	Facility under care and maintenance.	Facility currently under care and maintenance licence.
BEVA Pans (A,B,E & 1-14)	Evaporation of contaminated liquids.	Facility under care and maintenance.	Facility currently under care and maintenance licence.
P1500	Redundant R&D laboratories.	Facility under care and maintenance.	Facility currently under care and maintenance licence.
P1900	Redundant reactor development facilities.	R&D facilities.	Facility controlled under care and maintenance arrangements. The reuse of the laboratories is currently being investigated and a license request will be submitted to the Regulator if the reuse seems to be feasible.
P1900 Plutonium Labs	Redundant reactor development facilities used for U and Pu process chemistry at laboratory scale.	Facility under care and maintenance.	Facility controlled under interim care and maintenance arrangements.
P 1600 Labs	Radio-analytical and research laboratories.	Specific glove boxes are under care and maintenance.	Aim is to submit a request to the NNR to remove all Pu contaminated glove boxes.
H-Building laboratories	Applied Chemistry facility.	Some facilities are used by Applied Chemistry group and others are under care and maintenance.	Ground floor facility controlled under care and maintenance licence.
YM Vacuum	Vacuum pump maintenance facility.	Facility under care and maintenance.	Facility controlled under care and maintenance licence.
Building 2800	Previously used as pilot plant for conversion of ADU to UF_4 for the P2900 conversion plant. Currently, waste storage facility with concrete covered contamination inside facility.	Facility under care and maintenance.	Facility controlled under care and maintenance licence.

FACILITIES	FACILITY DESCRIPTION	CURRENT STATUS	COMMENTS AND ANTICIPATED DECOMMISSIONING ACTIVITIES
Area 40 (incl. Sub-area 40)	Redundant oil purification plant and decontamination facility as well as the basement in Area 24 contaminated by Area 40 ops.	The facility is being prepared to undergo Phase 3 decommissioning with the objective of being re-used.	The facility is under care and maintenance.

DECONTAMINATION SERVICES

The Decontamination Facility consists of a Wet Decontamination Section, where chemical or metallurgical decontamination techniques are used to recover nuclear materials, as well as a Dry Decontamination Section where nuclear materials are physically and mechanically removed to recover nuclear materials.

A total number of 40 batches originated from A-26 facility and quarantine storage facility were processed in the Decontamination Facility.

Decontamination Services recovered contaminated material from quarantine storage, A16 facilities which were decontaminated and cleared for scrap sale. The Area 16 Cylinder Storage facility is operational. All UF_6 cylinders on the Necsa site will be consolidated in this store.

MANAGEMENT OF NUCLEAR WASTE

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

Table 10: Solid waste management

Type	Origin	Storage facility	Number received 2020/21	Total as at 31 March 2021
Drums	Facilities on Necsa site and external clients.	Pelstore and Area 21.	**808** (Received in storage facilities).	**72 355** (Received in storage facilities. No shipments were conducted for the reporting period).
Spent fuel elements	SAFARI-1 storage pool.	Thabana Pipe Store.	100	1160
Spent sealed radioactive sources	Clients throughout South Africa, specifically the healthcare sector.	Area-24 Source Store.	125	11238
Smoke detectors	Clients throughout South Africa.	Area-24 Source Store.	56	30401

No shipment was conducted for this reporting period and the cumulative total number of waste packages transported and disposed of at Vaalputs is **6574** as at 31 March 2021. Area 24 Disused Source Storage Facility received sources around the country. These sources are characterised, conditioned safely stored in the facility. During the financial year April 2020 to March 2021, a total number of 125 Disused Sealed Radioactive Sources (DSRS) were characterised and conditioned. A tele-therapy head was collected from Groote Schuur Hospital.

The Mobile Hot Cell Unit performed two 10 000 Ci radioactive source exchange from Canada.

Two safety assessment reports were compiled for the repatriation of disused radioactive sources in Namibia and Botswana and these reports were submitted to the South African Health Products Regulatory Authority (SAHPRA) for the import applications of 15 DSRS.

Vaalputs waste disposal site

Waste characterisation is conducted on a continuous basis for safeguards and final disposal purposes. A total of **757** drums have been measured using the IQ3 scanner and the BNFL Segmented Drum Scanner respectively. The contents of **652** drums have been physically verified and registered on the Waste Tracking System.

6.2.3.1 LIQUID EFFLUENT MANAGEMENT (LEMS)

LEMS's core business is to receive, treat, and dispose of all industrial, low, and medium active radioactive effluent generated on the Pelindaba site. A comprehensive laundry service for work wear and property, plant and equipment (PPE) is also provided to Pelindaba facilities as well as ad hoc services to the NNR. The facility's main priority is to compliantly operate the facility under strict regulation and authorisation from relevant authorities.

During the reporting period, subject to the operational challenges due to the Covid-19 regulations that were enacted, LEMS continued to provide uninterrupted essential services to the generators and other clients who required such services during the lockdown period. All effluent releases were authorised by the relevant authorities (L&SA RPS & EMG) based on regulatory limits applicable. There were no unauthorised releases to the Crocodile River during this reporting period.

In June 2020, LEMS operated the effluent treatment and release by means of a 'manual' system and all movements and releases were recorded manually. This was done under agreed concession from L&SA while all checks, balances and authorisations remained in place and were enforced. A list of urgent refurbishment projects were identified, prioritised and will be attended to in the following reporting period.

Table 11: The key performance indicators for liquid effluent treatment at LEMS for the period 2020/21 are tabled as follows:

KEY PERFORMANCE AREA	TARGET	ACTUAL
Limit environmental impact	Annual dose ≤ 150 µSv	2.753 µSv (1.84%)
All releases to Crocodile River authorised and within regulatory requirements	100% Authorised releases	100%
Limit effluent releases to the Crocodile River	Total annual releases ≤ 250 000 m^3	95 788 m^3 (38.31%)
Zero downtime to customers	100% Plant availability	100% (365 days)

Vaalputs Waste disposal site

6.3 RESEARCH & TECHNOLOGY DEVELOPMENT (R&TD)

The mandate of the R&TD Division is to grow and maintain core research capacity in line with Necsa's mandate on the following nuclear, radiation and related fields:

(a) Radiation Science.

(b) Applied Chemistry.

(c) Radiochemistry.

In addition, R&TD houses the Office of Technology Transfer (OTT), which is mandated in terms of the Intellectual Property Rights from Publicly Financed Research and Development Act (Act 51 of 2008) to facilitate the identification, protection and exploitation (or commercialisation) of intellectual property (IP) developed and owned by NECSA. This makes R&TD Division an important player in the National System of Innovation (NSI) with regards to establishing a knowledge-based economy with specific emphasis on the nuclear and radiation sciences.

R&TD has grouped its research capabilities and related technologies into the following strategic impact areas as per the Necsa Corporate Plan:

1. Medical diagnostics and therapy.
2. Industrial applications of radiation.
3. Clean energy.
4. Material beneficiation.
5. Waste conditioning (nuclear and non-nuclear waste).

Each of these impact areas has several niche technologies which have potential to lead to commercial products and services, thereby contributing towards exploitation of publicly-funded research and development.

The generic R&TD organisational model is schematically shown in Figure 1.

Figure 1: Schematic of R&TD foundations, core skills, coordination and impact

The R&TD Division has a steadily growing number of clients that are served, through contract research, in the respective impact areas. Necsa's subsidiaries, in particular, are provided with focused research support in order to maintain a competitive advantage and to expand their existing product portfolio. A systems-engineering approach (based on technology readiness levels) to product development is followed. Core science and technology activities are supported by project and programme management. In order to benchmark and strengthen own capabilities, close collaboration with national and international collaborators is actively pursued. SHEQ are of uncompromising essence to R&TD.

SUMMARY OF MAIN RESEARCH OUTPUTS

Apart from commercial and institutional related programmes outputs, which will be discussed in more detail under the different departmental activities, the knowledge dissemination related research outputs of the R&TD Division can be summarised as follows:

Table 12:

Type of output	Number
Innovation disclosures	8
ISI journal publications	27
Other peer-reviewed journal publications	6
Technical and contract research reports	43

A list of journal publications can be found at the end of this Annual Report.

25 out of the 33 publications were published by the young scientists which are first time publishers, which demonstrates the focused development of the new generation of scientists.

The main R&TD activities and notable performances during the 2020/21 financial year are highlighted in Departmental context in what follows.

6.3.1 RADIATION SCIENCE DEPARTMENT

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

- High-level expertise in reactor simulation and calculational capability, which is both internationally benchmarked and recognised, supporting the Necsa Group's position in the global radioisotope market.
- High-level excellence in core expertise output, as recognised by peers (judged by research outputs), striving to make Necsa a partner of choice in reactor and radiation related programmes and initiatives.
- Internationally competitive research facilities manned by expert instrument scientists. These include upgraded SAFARI-1 Beam Line facilities which have contributed to improved materials and components used in industry and infrastructure as well as complementary X-ray facilities, accelerator beam line and point source facilities.
- A user community that grows the research within the National System of Innovation (NSI) by utilising the unique beam line research facilities and expertise of instrument scientists.
- Continued growth in human capital development by supporting high level training and research project study support at Necsa facilities.
- Alignment toward synergy within the NSI by maintaining and expanding on networks and research consortia with other national institutions (such as iThemba LABS) and the higher education institutions to focus best on the alignment of skills needed in the nuclear and radiation sciences.
- Continued IAEA participation through Technical Cooperation and Skills Exchange Programmes having the main objective of being a Centre of Competence in neutron beam line research in Africa with an extensive and active South African user group.
- Participate with international flagship activities such as the BrightnESS2 project with the European Commission.
- Provide new nuclear technologies, products and services that can compete on the international market by maintaining the core expertise in radiation S&T, reactor S&T and material analyses (using beam line technologies).

In this section of the report, progress and innovative developments in these areas will be highlighted.

RADIATION SCIENCE HIGHLIGHTS

Local (NSI) collaborations and networking

Collaborations within the NSI are important for importing knowledge to Necsa, establishing national collaborations and collaborative programmes and afford the opportunity to impact on ongoing national research that requires the unique skills and tools present at Necsa. This promotes Necsa's image as a valuable R&TD partner with some collaborations mentioned below:

- As part of Necsa's commitment to making nuclear and radiation expertise and facilities accessible to the National System of Innovation, (NSI) the diffraction laboratories equipped with two neutron diffraction and equivalent X-ray diffraction facilities, are routinely used by students and researchers, linked to Necsa's internal programmes, universities and research councils. The neutron diffraction facility is equipped with extensive temperature environments to facilitate in-situ parametric studies of materials. South African universities utilise these facilities for complementary, and in many cases, decisive inputs to their postgraduate research projects. Notably, residual stress investigations performed as a collaborative study with the University of Pretoria and the Centre for Scientific Innovation and Research on the residual stress build-up and material behaviour of LENS 3D printed Ti6Al4V alloy, demonstrated good qualitative agreement between the measured and modelled residual stress dependences.
- A Pulsing Unit is in the final stages of design, to be implemented in the Necsa Van de Graaff accelerator, which will expand the potential base of applications to include energy resolved neutron experiments. The main applications to benefit will be the imaging of complex flow systems and non-destructive testing using fast neutron radiography.
- The pre-feasibility study on the MPR SAFARI-1 replacement project was also completed, with several valuable contributions from RS members.
- A new NSI and potentially international collaboration project deals with testing fibre optic sensors for PWR reactors. The initial simulation work has been completed with the next phase to include radiation damage tests at SAFARI-1.
- The micro-focus X-ray facility continues its support to the NSI and universities by providing the facility, software and expertise for postgraduate research. Strides towards attracting commercial contracts in the automotive industry are being made which is expected to be concluded in the next financial year.
- The Pelindaba Laboratories for Accelerator Based Science (P-LABS) Section continues their strong established collaborative links within the NSI with the neutron laboratory of the MeASURe group at the University of Cape Town. The collaboration with iThemba-Labs (WITS) has resulted in the commissioning and operation of a joint iThemba-LABS/Necsa multipurpose, full Ion Beam Analysis (IBA) chamber. The team collaborates with the Canadian Light Source on knowledge exchange focused on the functionality of electron linac.

  Under the NSI and through the TIA cluster, the group is currently investigating the ability to determine the wall thickness of a dynamically eroding system, by using the identification of unique gamma signatures.

INDUSTRIAL APPLICATION IMPACT AREA PROJECTS

- A growing effort has been put into the Industrial Applications Impact Area at Necsa. The main focus applies gamma spectroscopy/detection to locate dislodged components and detect worn elements which effect the ore processing in the mining sector. Two areas are being investigated that deal with the ability to locate dislodged shrouds from front end excavators and the wall abrasion monitoring of industrial hydro-cyclones.

RADIATION CALCULATION SUPPORT

- Fuel and core management in the form of reload and core-follow safety calculations for SAFARI-1 are routinely performed. Focus was mainly on improved temperature calculations for fuel and molybdenum target plates and building thermal-hydraulic support capabilities, shielding design calculations for the Eskom Koeberg steam generator replacement project, fluence calculations for the SAFARI-1 biological shield and numerous safety calculations for NTP isotope transport and storage casks.

- Overall, calculation and analysis services are responsible for supporting most safety and licensing related submissions at Necsa. A large amount of effort went into ensuring that compliance to the NNR regulatory requirements for the verification and validation of calculation models used in safety and design analysis was done with the outputs of the shielding work being audited by NNR as part of the contract work done for Koeberg.

RADIATION SCIENCE USER FACILITIES AT SAFARI-1

- The SAFARI-1 research reactor provides thermal neutron beam lines which are specialised scientific instruments in which high level material related research is performed. These investigations look at the key fundamentals of materials research but also expand to the extremely practical applications which can boost new material developments and advanced manufacturing, respectively.
- These beam line instruments are unique and continuously developed to ensure continued relevance within the NSI and internationally, to promote the establishment of a competitive knowledge economy. The information obtained is at a fundamental atomic level and therefore has a high impact in a variety of applications and is of vast practical importance. Expert Necsa researchers assist in optimally extracting pertinent information.
- 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 has capabilities that enable in-situ parametric studies of crystallographic and magnetic phases and transitions that are present at the SAFARI-1 research reactor. The following applications conducted during the year are mentioned: 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-value components (National Laser Centre and Eskom), WC-Co coatings (DSI-NRF Centre of Excellence in Strong Materials) and the WITS production of aircraft that the appropriate pre-conditioning treatment to alleviate complications during machining, etc.
- The diffraction facilities, having been recognised by the IAEA through the Technical Cooperation programme, serve as a leading African centre of expertise with knowledge and by topical experts from African research centres.

CONTRACT RESEARCH PROJECTS

- BrightnESS2 Neutron Quality Label (NQL) and demonstration thereof was done with the study of an industrially benchmarked large wall welded steel pipe.
- A project for non-destructive testing was completed by the Radiography and Tomography Section for the Kromberg and Schuberton company.

OUTREACH AND AWARENESS DRIVES

The Radiation Science Department at Necsa, in collaboration with iThemba LABS, hosted on-line mini-symposium targeted at the scientific disciplined and industry to consolidate the South African neutron community, attract new interests, to assess short- and long-term needs, as well as to identify consensus from the community on modalities for international access. Similarly, with the international situation, there is a general lack of familiarity (sensitivity) to what the techniques can offer, seen to be the province of purely fundamental research, largely for condensed matter physics. The mini symposia have clearly dispelled these perceptions, revealing a wealth of information that can be provided to most scientific and engineering disciplines within both academic and industrial focused research.

INTERNATIONAL COLLABORATIONS

- The BrightnESS2 project of the European Commission: BrightnESS2 which runs over three years, 2019 – 2021, is a flagship project within the DSI. The RS Beam Line Section participates with work packages 2.1 and 2.2 in collaboration with iThemba LABS and with the involvement of the South African researcher community at large. The primary aim is capacity building within neutron research in South Africa and the potential benefit from collaborating with the new ESS facility that is scheduled to go online in 2023. The second workshop initially scheduled for June 2020 had to be presented as ten virtual mini symposia that were run over the period August 2020 to January 2021. The anticipated output of this activity is a position paper on neutron scattering in South Africa, as well as a report to the European Community on the needs of South African users. Work package 2.3(A) deals with the Engineering Pilot on the use of Neutron Strain Scanning: Here the Necsa Neutron Diffraction Section actively participates in equivalent collaboration with the facilities and scientists from the three leading neutron strain scanner instruments in Europe,

i.e. ILL (France), MLZ (Germany) and ISIS (United Kingdom). The primary aim is to establish standardisation protocols to ensure integration and inter-comparison among neutron strain scanners internationally. This will be entrenched in a NQL trademark for industrial compliance. This collaboration has established a significant publication in the open literature, with the investigation of industrially benchmarked samples from prominent international companies (gas transportation and aircraft industry) being concluded. The work associated with this collaboration was performed on the MPISI neutron strain scanner instrument.

- A collaboration with the Future Industries Institute at the University of South Australia was established to investigate the kinetics stress relief and subsequent optimisation of post-processing heat treatment in additive manufactured (3D-printed) titanium samples. Changes in material characteristics that result from heat treatment affect strength, ductility and fatigue performance. Understanding these changes is therefore of great significance when designing and printing components for envisaged application, with this work also carried out at the MPISI neutron strain scanner instrument.
- The first phase of residual stress investigations of 7050 T7451 aluminium billets to assess the influence of high-speed machining on distortions when manufacturing components in the aircraft industry was performed as a collaboration with the Department of Mechanical Engineering of the University of Texas at Dallas. The results on the stretch stress relieved billet revealed the presence of large crystallographic texture variation through depth, as intensity bands shown in Figure 2 below. This work was performed on the MPISI neutron strain scanner instrument in its texture mode.

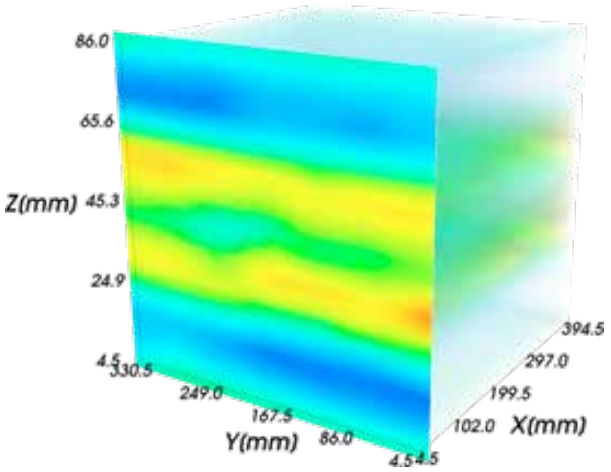


Figure 2: Qualitative indication of position dependent crystallographic texture variation through comparison of Al (311) and Al (222) peak intensity ratios

- The Bakeng se Africa project (ERASMUS + Capacity-building in Higher Education) which runs over three years (2019-2021) brings together six higher education institutions (three of which are South African and the other three are European) together with Necsa. One of the aims of the project is to collect a large digital repository (micro-XCT, Lodox Statscan, and CBCT scans) of identified South African osteological collections, and make them globally available. The Radiography and Tomography Section has successfully established a data server for Bakeng se Africa (ERASMUS + Capacity-building in Higher Education). The server will serve as temporary storage for all the tomographic data (Skeletal Repository) taken at the micro-focus X-ray facility.

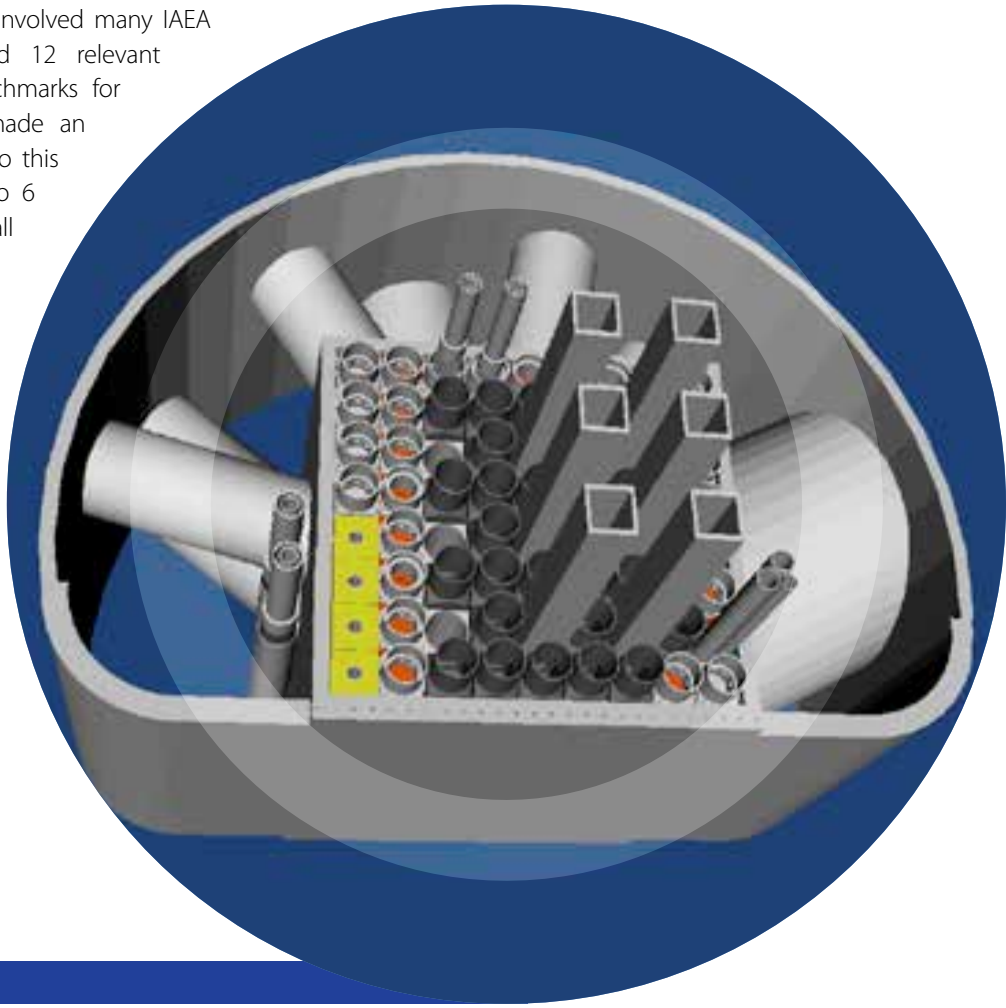
Radiation and Reactor Analysis Services and Products (RRASP) (Clean energy impact area project)

RADIATION AND REACTOR CALCULATION SUPPORT

- Fuel and core management in the form of reload and core-follow safety calculations for SAFARI-1 are routinely performed. Focus was mainly on improved temperature calculations for fuel and molybdenum target plates and building thermal-hydraulic support capabilities, shielding design calculations for the Eskom Koeberg Steam Generator Replacement Project, fluence calculations for the SAFARI-1 biological shield and numerous safety calculations for NTP isotope transport and storage casks.
- Overall, calculation and analysis services are responsible for supporting most safety and licensing related submissions at Necsa. A large amount of effort has gone into ensuring compliance to NNR regulatory requirements for the verification and validation of calculation models used in safety and design analysis was done with the outputs of the shielding work being audited by NNR as part of the contract work done for Koeberg.

REACTOR CODE DEVELOPMENT

- The OSCAR nuclear reactor calculational system is currently in its fifth generation. This focus this year was primarily on migrating existing users to this latest version of the system and enhancing capabilities of the system to include support for LWR and SMR reactor types. OSCAR is currently used by the SAFARI-1 reactor at Necsa, the HFR and HOR reactors in the Netherlands, the MNR reactor in Canada, as well as at various universities.
- OSCAR is further linked to the IAEA through a Collaborative Research Project (CRP) on multi-cycle depletion methods for research reactors. The multi-year project involved many IAEA members States and gathered 12 relevant international experimental benchmarks for analyse by participants. RRT made an extensive analysis contribution to this project by applying OSCAR-5 to 6 of these benchmark problems, all yielding excellent results.
- Further, OSCAR was utilised in contributing to the international CORTEX project, which investigates sources of power oscillations in nuclear power reactors, via a series of dedicated experiments conducted at various international research reactors.



OSCAR-5 model

RECOGNITION

The expertise of Necsa's RS Division has gained national and international recognition, showcased by the fact that:

- Access to international neutron facilities, based on peer reviewed research proposals, has been awarded to Radiation Science staff members at beam line facilities of the IBR-II reactor at the Joint Institute of Nuclear Research, Russia.
- Radiation Science personnel serve on various international committees: International Scientific Committee of MECA SENS (MECA SENS: Mechanical Stress Evaluation by Neutron and Synchrotron Radiation), the New Opportunities for Better User Group Software (International Advisory Committee, and the Executive Committee and Strategy and Policy Committee of the African Light Source.
- Radiation Science personnel serve on various national committees: The South African Committee of the International Union of Crystallography, as Chair of Synchrotron Roadmap Implementation Committee while also dealing with ad hoc review tasks for the NRF such as researcher rating applications.
- Radiation Science personnel serve on various technical committees: The Board of the DSI-NRF Centre of Excellence in Strong Materials, as well as on an expert panel of the IAEA to establish a reference document on "Neutron Scattering with Low and Medium Flux Sources".
- A Radiation Science staff member was invited as an international examiner of a PhD thesis for the University of New Castle, Australia.
- The quality of Radiation Science personnel is highlighted by the awards and ratings granted by the NRF; with 4 researchers holding an NRF rating and two awarded NRF grants based on quality research proposals.
- The expertise of Radiation Science personnel is also highlighted by their invitation to review proposals from international facilities like ANSTO and review/referee manuscripts submitted to ISI journals.

TRAINING, HUMAN CAPACITY BUILDING AND TALENT MANAGEMENT

Human capacity building and talent management are the most important aspects when generating a knowledge base aimed at developing value added products and services whilst still expanding on research activities. The development of personnel is given high priority, and some are listed below:

- HR capacity building and talent management include a year average of approximately ten Radiation Science personnel enrolled for PhD studies and three enrolled for MSc degrees. Three were awarded their PhDs and one an MSc degree. In addition, postgraduate support was given to two external PhD and two external MSc students, performing their studies at our radiation research facilities.
- Dr. PM Bokov was appointed as extra-ordinary adjunct Professor at North-West University (NWU).
- Dr. AM Venter was appointed as extra-ordinary Professor with the CARST School at NWU.
- Courses at an Honours and Masters level were presented in the Industrial Applications of Diffraction Techniques and Neutron/X-ray Radiography and Tomography to the CARST Department of the NWU.
- The Fines Tailings and Disposal Training Workshop was attended by a member of PLABS.
- Online schools in Powder Diffraction and Small Angle Neutron Scattering, a Design and Engineering of Neutron Instruments Meeting and a three-day short course on Phase Diagrams Interpretation were attended by members of the Diffraction Section.

The Bakeng Interim Meeting II – a virtual workshop was attended by members of the Radiography and Tomography (RadTom) group.

The Interim Meeting II – a virtual workshop was organised by the Bakeng se Afrika, a European Union co-funded project with the goal of creating a digital repository of micro-XCT scanned skeletal elements of South African individuals. The overall intention of the three-day meeting was for the various stakeholders to provide status progress report on the project with respect to their contribution. The RadTom group members attended the meeting where the progress on digital storage capacity at Necsa was discussed as well as the compilation of standard operating procedures related to micro-XCT scan.

6.3.2 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 (front and back end), material science of nuclear materials (especially uranium), and related spin-off technologies and to apply this know-how in the development of new products. The Department's core skills areas reside in nuclear fuel cycle-related materials beneficiation; plasma-based material modification and processing; waste conditioning technology; 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 NSI programmes, such as the Energy Storage Programme and the Advanced Materials Initiative (AMI) programmes of the DSI reaped significant benefit from the research involvement of the Applied Chemistry Department, through the R&TD's specialised core skills. The previous Fluorine Expansion Initiative that was sponsored by the DSI came to its end but was replaced with a more focused programme to develop technology to establish a large-scale $LiPF_6$ production plant.

Applied Chemistry highlights

TECHNOLOGY DEVELOPMENT PROGRAMMES WITH LOCAL AND INTERNATIONAL COLLABORATIONS

NUCLEAR FUEL CYCLE (NFC) DEVELOPMENT PROGRAMME

The 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.

The current focus is in building up expertise in the NFC field. A number of very experienced personnel in this specific field went on retirement during the year but a few exiting young researchers are in the process of taking up this mantel.

Plasma Gasification Development Programme (Waste impact area projects)

Plasma is a medium with one of the highest contents of energy, and therefore substantially lower plasma power is needed to supply the sufficient amount of energy, compared to other heating methods. The results are minimum contamination and dilution of the gaseous product (syngas). More advantages are: a better control over the composition of the syngas product, its higher energy value and reduction of undesired contaminants like tar, CO2, CH4 and higher hydrocarbons. In addition, plasma treatment offers a better control over the temperature of the system, higher process rates requiring a lower reaction volume. The system is also not very sensitive for aqueous liquid in the feed. Any organic liquid will be destroyed along with the solids. As the energy for the process is supplied by plasma, the possibility to gasify at significantly higher temperatures (compared to conventional high temperature methods) renders the system able to be applied to unsorted nuclear and non-nuclear waste.

Plasma gasification has been successfully demonstrated at a 0.1 ton per day laboratory and 0.5 ton per day demonstration scale, as a technique to treat non-radioactive waste by destroying all organic content and melting the ashes in this waste. Two impact area projects are in progress using this technology for treatment of non-nuclear waste: one for medical waste treatment and another for municipal waste treatment.

Medical Waste Plasma Gasification (MW PlasGas) was identified as one of the projects with a relatively short time to market. With all of the up-front experimental work on the laboratory system, the up-scaling to 0.5 tpd scale for wood chip waste and the initial business case, initial indications show that this project has a high chance of success, with a big profit margin. The management team is actively looking for funding from both private and government sources, to support this project.

The second project in the Waste Treatment Impact Area is the development of a demonstration Plasma Waste to Energy System (PlasWEn). This will be used as a demonstration system to prospective clients for treatment of different waste types with the aim to initiate different business opportunities. The South African National Energy Development Institute (SANEDI) awarded a second funding agreement to Necsa to build a proof-of-concept mobile Development Waste Treatment Facility, capable of treating between 0.2 to 0.5 tonnes of organic-waste feed per day (municipal waste, Covid waste, plant material, etc.) and an estimated electricity generating capability between 10 and 25 kW.

For nuclear waste treatment, the Plasma Technology team, in conjunction with PE engineers, NLM waste experts and project managers are in the process of developing several plasma waste treatment pilot systems for treatment of liquid and solid LLW as well as PTFE waste. The main aim is volume reduction to address Necsa`s mandate, by the DMRE, to down manage nuclear liability arising from disused historical strategic nuclear (and related) facilities. The classification of NW on Necsa site has been documented in a Necsa Consolidated Waste Management Strategy (NLM-STRG-00054). The strategy considers waste "treatment" as one of the key process to be implemented before waste can be conditioned and finally send for storage or disposal. Three basic treatment objectives are:

- Volume reduction.
- Radionuclide removal.
- Changing of physical or chemical composition of the waste.

Most of the identified waste is bulky and not highly radioactive and thus can be classified as Low Level Waste (LLW), some however, do contain significant amounts of recoverable enriched uranium.

Metallic Powder Spheroidisation Development Programme (Material beneficiation impact area project)

South Africa is one of the main producers of titanium in the world. However, South Africa at present is not a titanium manufacturer and therefore an active programme developing the largest (2 m3) 3D printer in the world was initiated which was originally targeted to produce parts from titanium and titanium alloys for mainly the aerospace industry. The Centre for Rapid Prototyping and Manufacturing (CRPM) at the Central University of Technology (CUT) produces custom parts and implants for the dental and medical sector. These industries require spherical powders for use in their applications. The ultimate aim of the programme is to establish industrial-scale facilities to supply qualified powder to the market.

Currently all alloy powders for 3D printing activities in South Africa are being imported. Various methods are available to produce spherical powder such as atomisation and spherodisation. Necsa has a competitive advantage because the Tekna radio-frequency (RF) plasma system is currently the only equipment in South Africa that can be used to do R&D-related work for the spheroidisation of metal and alloy powders. In order to determine plasma parameters for powder spheroidisation, the spheroidisation project was included in the Nuclear Materials Development Network (NMDN) Business Plan. This project is partially funded by the DSI under the Advanced Materials Initiative (AMI) programme.

Within the AMI programme, the spheroidisation project will continue to investigate the spheroidisation of various types of powders. Currently, the process developed in the first three years of the NMDN Business Plan, for qualification of Ti6Al4V use in the medical industry (in collaboration with CUT and Stellenbosch), will be extended to other powders in the medium- to long-term, if and where necessary.

Accurate and precise O, N and H impurity level determination in titanium and titanium alloy powders are critical in order to deliver a powder suitable for 3D printing. Although various combustion analysers are available in South Africa, the LECO OHN836 instrument is capable of measuring extremely low concentrations of these impurity elements, down to the hundred ppm range, in the titanium alloy powder and solid sample materials. Such accuracy is critical for powders used in 3D printing processes. This instrument is used by all international producers of spherical Ti6Al4V powders for powder quality and certification purposes. However, before December 2020, such an instrument was not available within South Africa and therefore no accurate analysis of Ti6Al4V powders could be obtained. In early 2019, a funding proposal was submitted to the DSI's high-end infrastructure fund in order to obtain funding for the purchase of this scientific equipment. On 12 March 2020 a funding grant of R 2.6 million was awarded by the DSI to Necsa. The LECO instrument was commissioned at Necsa in early 2021. Various entities and collaborators will require the analyses results generated by the LECO instrument. These include the AMI fraternity, the Rapid Product Development Association of South Africa (RAPDASA), the CSIR National Laser Centre, Aerosud as well as the Collaborative programme in Additive Manufacturing (CPAM), Mintek, among others.

Plasma Dissociated Zirconium/Pigments Development Programme (Material beneficiation impact area)

Necsa developed this novel pigment manufacturing process using Plasma Dissociated Zircon (PDZ) as feedstock material in the late 1990s. The pigment manufacturing process entails that doped-zircon pigments can be manufactured directly from PDZ as feedstock. Necsa has an international patent on the manufacturing of PDZ pigments. This process was further optimised during the Innovation Fund Programme (DACST 1) from 1999 to 2003.

Three PDZ pigments were developed namely:

- Praseodymium yellow (Pr-yellow).
- Vanadium blue (V-blue).
- Iron coral pink (Fe-coral).

The above-mentioned pigment manufacturing processes were developed to different Technology Readiness Levels (TRLs) and more optimisation work will be required on large scale. The original facility was, however decommissioned and dismantled

The second phase – the Bankable Feasibility Study of the IDC/Brinni PDZ Pigment Commercialisation Project – commenced during September 2020 and Resonant was appointment as Engineer House to execute this phase. Necsa was tasked to manufacture 3 kg of Pr-yellow and 3 kg of V-blue pigments for industry evaluation and this phase was done in collaboration with the University of Pretoria due to the unavailability of the necessary infrastructure currently at Necsa. It was foreseen that only the final milling process and the characterisation of the pigments will be performed at Necsa.

The experimental work started in September 2020 at the University of Pretoria and the task was completed by mid-October 2020. Thereafter the final milling of the respective pigments to industry standards was carried out as defined during the initial R&D phase of the project. The final milling step (6 kg of pigments in total) was completed in November 2020 and was sent to an international pigment evaluation laboratory for analyses. The results of the evaluation will determine the next phase of the project which will entail the engineering design of the PDZ and the respective pigment plants.

FLUOROCHEMICAL TECHNOLOGY DEVELOPMENT PROGRAMME

NEODYMIUM TRIFLUORIDE DEVELOPMENT PROGRAMME

Neodymium trifluoride is an important chemical compound used in the manufacture of neodymium metal, which is mainly used in alloys for super magnets. These magnets are used in, among others, wind turbines and electric motors, both of which are important for clean energy. South Africa has abundant rare earth mineral resources, which includes neodymium. The conventional processing of ores to neodymium fluoride produces large amounts of hazardous liquid waste, and is therefore not environmentally friendly.

Necsa developed a novel anhydrous fluorination processing route for neodymium trifluoride, which produces very little waste. The process was patented and Necsa has entered into a licensing agreement with another entity, who is busy with the scaling up of the process with the aim of eventual commercialisation.

Lithium Hexafluorophosphate Development (Clean energy impact area project)

Lithium hexafluorophosphate is the preferred salt used for the formulation of the electrolyte for lithium ion batteries. The market for lithium ion batteries is growing rapidly, due to demand in fields like mobile computing and electric cars. Stationary energy storage for solar and wind power plants also has significant growth potential. Lithium hexafluorophosphate is, therefore, very important in the field of clean energy.

Necsa's Applied Chemistry Department is developing a novel processing route for lithium hexafluorophosphate. Two patents have already been obtained and more patent applications are being considered. The intention is to scale up the process to a commercial plant in order to supply local and international markets. The laboratory phase of the research is mostly completed. To start the scaling up of the developed technology, a bench scale pilot plant was designed. The procurement process for the plant has started and it is envisaged that it will be commissioned towards the end of 2021. This project enjoys significant financial support from the DSI.

Energy Storage (Clean energy impact area project)

The primary focus of the Energy Storage project is currently to develop a method for fluorinating lithium ion battery cathode materials to improve performance. If this can be successfully commercialised, it will not only contribute to Necsa's fluorochemical business, but also enable the beneficiation of South African manganese minerals. Necsa R&TD is participating in the DSI funded Energy Storage Consortium with this project, and is collaborating with other institutions that are developing novel cathode materials.

$LiMn_2O_4$ (LMO) is a precursor material for the manufacture of cathodes for lithium ion batteries. The theoretical capacity of these cathode materials is competitive with existing materials used in commercial cells. However, these materials exhibit some chemical and physical deficiencies during cycling that lead to a measured capacity loss, obstructing mass commercialisation. It is understood and accepted that manganese dissolution into the electrolyte is the principal failure mode that results in the degradation of LMO cathode performance. In an attempt to address the aforementioned issues, it is postulated that the application of fluoride surface functionalisation may provide improved cathode cycle lifetime and electrochemical properties.

It was envisaged that a two-pronged approach be undertaken during this study – (1) A theoretical investigation using ***MedeA*** (Material Design Inc.) molecular modelling software to investigate the effect of fluoride addition on the physicochemical properties of the LMO lattice structure and the battery system as a whole. (2) An experimental methodology to substantiate theoretical determinations to afford an idealised candidate material to potentially be industrialised.

Novel pre-screening modelling calculation work has been completed and some molecular dynamics simulations have also been conducted to compare theoretical outputs with known literature values (experimental and theoretical) and seem to correlate very well. In order to practically achieve the aforementioned project requirements experimentally, a robust method to reproducibly produce ideally tailored fluoro-cathodes is required. Three novel methodologies have been identified (with one IVD) and all preliminarily evaluated in the laboratory. Moreover, an eight-channel battery tester was purchased (funded by Thuthuka and DSI) to ensure that these modified systems can by electrochemically evaluated (in-house). F-analysis methodology has commenced and is in the process of being refined, in collaboration with our analytical experts.

In the coming year the best fluorination method will be selected to fluorinate samples for testing and quantifying performance improvements of a model cathode material (LMO). Samples will also be fluorinated for other Energy Storage Consortium members to test the effect of fluorination on materials that they are developing. The molecular modelling framework will continue to be developed to ensure that it is in line with experimental results, and will also be applied to the materials developed by Energy Storage Consortium partners.

WASTE MANAGEMENT DEVELOPMENT PROGRAMME

Research and development continued on the conditioning and immobilization of radioactive waste. In this regard, the Basic Ordering Agreement (BOA) contract with the USA Argonne National Laboratory (ANL) was concluded, with delivery of the final report on evaluation of the developed waste forms and production technologies for encapsulation of waste streams resulting from Mo-99 manufacturing waste. Over the duration of this BOA since 2013, five work packages have been completed successfully for a total payment to Necsa of M$1.83. In another waste immobilization project, the Nuclear Waste Research (NWR) section is collaborating on the IAEA Collaboration Research Project (CRP) entitled "Ion Beam Irradiation for High-Level Nuclear Wasteform Development" (INWARD), which has been approved from 7 June 2018 to 30 June 2022. NWR successfully completed the preparation of International Simple Glass (ISG) samples (cutting, polishing and characterization) prior to irradiation by other INWARD participants.

A waste conditioning project was successfully completed for the UChem plant at the MTR Fuel facility, where problems are experienced with unstable and hygroscopic crystal/sludge waste, originating from the evaporation tables where liquid waste from various acidic and alkaline processes in their plant is evaporated. The waste forms sludge after some time, which is corrosive and causes damage to the metal drums in which it is stored. NWR successfully developed a process to neutralise and stabilise UChem's crystal waste.

Research and development continued on the recovery of uranium from historical waste on the Necsa site. One of the waste streams requiring urgent action, is the so-called "Alumina-gel" which was historically used as a dry scrubber to collect UF_6 from exhaust gases from vacuum pumps used in the Z-enrichment plant. NWR was contracted by the NLM Division to investigate methods for processing this waste so that Necsa's liability can be reduced, by recovering uranium to the extent that any remaining waste can be classified as low-level waste which can be disposed of at Vaalputs. In this financial year, the optimisation of leaching parameters to maximise uranium recovery was completed, and the optimised process was successfully tested on 100 g samples from different batches. Optimising the solvent extraction process for recovering uranium from the leach solution and separating it from aluminium, is currently in progress. NWR has also been working on a project funded by the TIA, on Legacy Nuclear Waste Beneficiation by development of a hydrometallurgical process for U recovery from historical radioactive waste, to enable disposal of the waste. The project ended on 31 March 2021 and milestones achieved include integration of the process steps using actual radioactive waste and optimisation of the process on laboratory scale.

Conferences and visits abroad

Dr. Mualusi Nelwamondo from the Nuclear Waste Research section was invited to attend and present a lecture at the virtual Joint ICTP-IAEA International School on Radioactive Waste Cementation from 19 October 2020 to 25 November 2020. The title of her lecture was "Improving Radionuclide Retention in Magnesium Potassium Phosphate Waste-form by Phase Manipulation".

Dr. Nelwamondo also attended the Second Research Coordination Meeting of the IAEA Coordinated Research Project (CRP) on Ion Beam Irradiation for High Level Nuclear Waste Form Development (INWARD), held as a virtual event from 2 to 6 November 2020.

Dr. IJ van der Walt was invited as a guest speaker at the 50th Scientific Meeting of the International Association of Dental Research hosted by the Sefako Makgato Health Science University. He presented a lecture on Plasma Technology and the advancement possibilities for the medical industry on 13 November 2020.

TRAINING, HUMAN CAPACITY BUILDING AND TALENT MANAGEMENT

Nkateko Makaringe finalised her study in project management from the University of Pretoria. She will graduate during April 2021.

Dr. H. Bissett is currently a co-supervisor for six post-graduate students of which four are situated at Tshwane University of Technology, one at the Central Unversity of Technology and another student at Stellenbosch University.

Dr. IJ van der Walt is currently the co-supeevisor for three MTech students from Tshwane University of Technology, one M.Eng from North West University, one M.Eng from Wits, one MSc from Sefako Makgato University and one PhD from University of Pretoria. In collaboration with Safako Makgato University, Dr. van der Walt also installed a cold plasma research system to the dental research group. This will be used in surface modification of materials as part of dental research.

6.3.3 RADIOCHEMISTRY DEPARTMENT

The Radiochemistry Department continued to perform pipeline research to retain and enhance Necsa's status as an internationally competitive radiochemical isotope producer, thus contributing to enhancing quality of life. Besides the development of radiochemicals (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 has 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.

Radiochemistry Product development

Radiochemistry Product Development Programmes

A new non-invasive therapeutic application for skin cancer to be produced locally for the African market (*Medical Diagnostic and Therapy Impact Area Project*)

Rhenium-SCT® (Skin Cancer Therapy) is a specialised state-of-the-art skin brachytherapy that utilises the beta-emitter Rhenium-188. This therapy is indicated for the treatment of Basal Cell and Squamous Cell Carcinoma. Rhenium-SCT is a single session, non-invasive, out-patient treatment which is provided by OncoBeta GmbH (Germany), a pioneer and innovator in the epidermal radioisotope sector that currently supplies Rhenium-SCT to the European, Australian and South African markets.

The first patient dose was successfully manufactured and shipped to Steve Biko Academic Hospital (SBAH, Pretoria) for treatment of a patient thereafter. In the context of Covid-19, Rhenium-SCT is considered non-critical, therefore patients could not access clinics for treatment from March until October 2020. Productions resumed in the latter part of the year including a successful production and shipment to a clinic in Perth, Australia. The number of clinics able to administer the treatment in South Africa has also increased (new sites in Durban and Johannesburg).

Development of a single vial ^{68}Ga-PSMA kit for treating prostate cancer (Medical Diagnostic and Therapy Impact Area Project)

Gallium-68 is a new, exciting PET imaging radioisotope. However, its half-life of 68 minutes makes synthesis at a radiopharmacy facility and shipment to a hospital challenging. The solution to this limitation is a freeze-dried kit where the ^{68}Ga is added in the hospital and the preparation is ready for injection after 10 minutes, otherwise referred to as a "shake and shoot" kit formulation. The ^{68}Ga eluate can be added to a variety of molecules for different indications.

The most recent molecule of interest is the Prostate-Specific Membrane Antigen (PSMA), which is selective for primary and secondary prostate cancer. The Necsa Radiochemistry Group has 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 authorisation from the SAHPRA. Necsa secured R4.5m in funding from NTP, drawn from the NTP R&D and Innovation Fund, to proceed with the next step in the value chain, namely the production according to good manufacturing practice (GMP) in collaboration with the P3000 radiopharmaceutical facility at Necsa.

Work has commenced on the development and validation of the range of analytical methods needed to perform quality control on the manufactured kits. Three quality control methods have thus far been fully developed and validated and the resulting protocols and reports submitted to NTP for evaluation. Development of the remaining quality control methods are in progress. Pre-filtration experiments and in-house identity and purity methods for the qualification of the starting material have been concluded. This is part of Phase II which involves 50 vial batches of kits and should be concluded by early 2022. Shelf life determination and bio-distribution and toxicity studies (in mice) will run concurrently with the technology transfer process to P3000 as part of the scale up to 500 kit vial batches in Phase III.

Completion of the Phase I/II Clinical Trial for a Companion Diagnostic (*Medical Diagnostic and Therapy Impact Area Project*)

Part A of the phase I/II clinical trial on the use of ^{195m}Pt-cisplatinum as a companion diagnostic to optimise and individualise the dose for patients, funded by the TIA for completion of the trial preparation phase, has been completed. The next phase (Part B) is execution of the trial. A due diligence for this part was completed with TIA while a GMP licence is in process in order to produce the ^{195m}Pt -cisplatinum for clinical trials. NTP has indicated their intention to provide co-funding for execution of the trial (Part B) contingent on receipt of TIA funding. This proposal was presented to the relevant TIA Committee for consideration to provide remainder of the funding required. TIA postponed its decision to further fund the project due to other funding obligations identified for 2020/21, particularly Covid-19 related endeavours. As a result of this decision, another funder willing to invest in radiopharmaceutical development has been sought. Discussions have commenced with the potential funder where the business case was presented for evaluation. A decision is expected mid-2021.

Terbium-161 PSMA (*Medical Diagnostic and Therapy Impact Area Project*)

Necsa's Radiochemistry Department is part of an international team that is expediting this exciting new radioisotope into clinical studies. Necsa continued to provide the irradiated targets for the Tb-161 production as part of this collaboration. The clinical phase and first in human studies in Germany using Tb-161 DOTATATE in the neuro-endocrine tumour patients have taken place and were published in the prestigious ***Journal of Nuclear Medicine.*** This study demonstrated the feasibility to image even small metastases after injection of relatively low activities of ^{161}Tb-DOTATOC using γ-scintigraphy and SPECT. Based on this essential first step to translate ^{161}Tb to clinics, further efforts will be directed towards the application of ^{161}Tb for therapeutic purposes. Several other high impact papers have been published by the group. A first human trial in South Africa using Terbium -161 PSMA for prostate cancer patients is planned in the new financial year once a technology transfer has been secured as well as the necessary investment.

A new theranostic for identifying and treating tumours

The molecular compound, GluCAB 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. It is fast becoming the norm in personalised medicine. The concept of passive targeting through the enhanced permeability and retention (EPR) effect has been demonstrated through micro-PET evaluation in xenografted mice where clear tumour uptake could be demonstrated. A new chelator has been successfully incorporated in the molecule which will allow radiolabelling at room temperature and physiological pH which is a major improvement. Synthetic work for the current phase which involves the active targeting through a cleavable linker has been completed and confirmatory animal tests are planned in the next financial year. This phase is funded by the TIA Seed Fund but engagement with new funders is ongoing.

ENABLING TECHNOLOGY PLATFORMS/CLUSTERS

Nuclear medicine research infrastructure

The Nuclear Medicine Research Infrastructure (NuMeRI) is part of the DSI's South African Research Infrastructure Roadmap. NuMeRI is a one-stop, distributed network of medical imaging facilities dedicated to drug development and imaging-based pre-clinical and clinical research. This core research network is embedded within the healthcare domain and provides a mutually beneficial environment for medical research and general practice – with public health being the common goal. The research conducted at NuMeRI will contribute to the development of a range of therapies that address the national priority diseases.

The NuMeRI project was launched in April 2017 and incubated by Necsa for its first three years. Execution of the Necsa incubation phase/contract for NuMeRI was successfully completed by Necsa and all the KPIs were achieved. This is a major achievement for Necsa having delivered on a MR 149 Infrastructure Programme for the DSI. This proves Necsa's capability to execute such large-scale research projects. An independent legal entity (NuMeRI NPC) was registered in February 2019 which has since taken over the NuMeRI project. Since 1 April 2020 NuMeRI NPC was contracted with the DSI for future funding. Full handover from Necsa to the NPC took place in this financial year. Necsa assisted the NPC to launch the tender for the main building including two cyclotron bunkers as well as the research and commercial cyclotron tenders. The building process started at SBAH late March 2021. Once fully established, NuMeRI will be a distributed network comprising the following three research facilities:

- **The NuMeRI main centre at SBAH**

  This facility will contain pre-clinical and clinical imaging facilities, together with cyclotrons and radio-pharmacies. The detailed design of the facility has been finalised and construction is due to commence shortly, with completion scheduled for March 2024.

  A temporary, modular PET-CT imaging centre housing the country's most advanced PET-CT has been commissioned, servicing the needs of NuMeRI clinical research in the interim and the SBAH Nuclear Medicine Department.

- **The NuMeRI Node for Infection Imaging (NII) at Tygerberg Hospital**

  The existing TBH PET-CT Centre was extended to accommodate the NII, a new PET-CT scanner was procured and the radiopharmacy equipment upgraded. The facility was officially opened on 14 November 2019 and will support molecular medicine research with an emphasis on (tuberculosis) infection imaging.

  Several research projects have commenced and the procurement of additional imaging equipment is planned.

- **A pre-clinical imaging facility at Pelindaba**

  Existing laboratories at Pelindaba were transformed into a dedicated facility focusing on preclinical tracer and drug development research. An array of molecular imaging equipment to scan laboratory animals, together with the requisite ancillary apparatus, was installed.

PRE-CLINICAL IMAGING FACILITY

Necsa transformed a set of general laboratories at Pelindaba, licensed to perform radioactive work, into a dedicated NuMeRI interim Pre-Clinical Imaging Facility (i-PCIF).

Since April 2017, the i-PCIF has grown into a one-stop laboratory supporting projects focused on preclinical tracer and drug development research. The facility is equipped with a microSPECT/CT, a high resolution microPET-CT and benchtop optical imaging camera for molecular imaging; together with a cryotome for preparation of tissue slices, an autoradiography scanner, individually ventilated cage system for appropriate animal housing and a high-performance automated gamma counter. A mobile Biosafety Level 3 (BSL3) laboratory has recently been commissioned, allowing the i-PCIF project portfolio to extend into research focusing on infectious diseases.

NuMeRI interim Pre-Clinical Imaging Facility (i-PCIF)

The Radiochemistry R&TD Group of Necsa is responsible (and contracted) for running the i-PCIF and makes use of all the support functions and facilities at Pelindaba. Necsa appointed Professor Thomas Ebenhan to head the i-PCIF team, which comprises a senior scientist (seconded 80% to NuMeRI activities), a radiopharmacist and a laboratory animal technician. All core team members have the required authorisation to conduct preclinical research projects and registrations with professional body are regularly updated.

Services regarding animal handling and interventions are supervised/authorised by National Association for Laboratory Animal Science accredited personnel. In 2019, the facility was reorganised to allow the i-PCIF to be registered at the South African Veterinary Council as a research facility.

Since 2017, the facility has participated in excess of 60 studies, published more than 33 peer-reviewed articles and contributed to projects resulting in the graduation of 15 students.

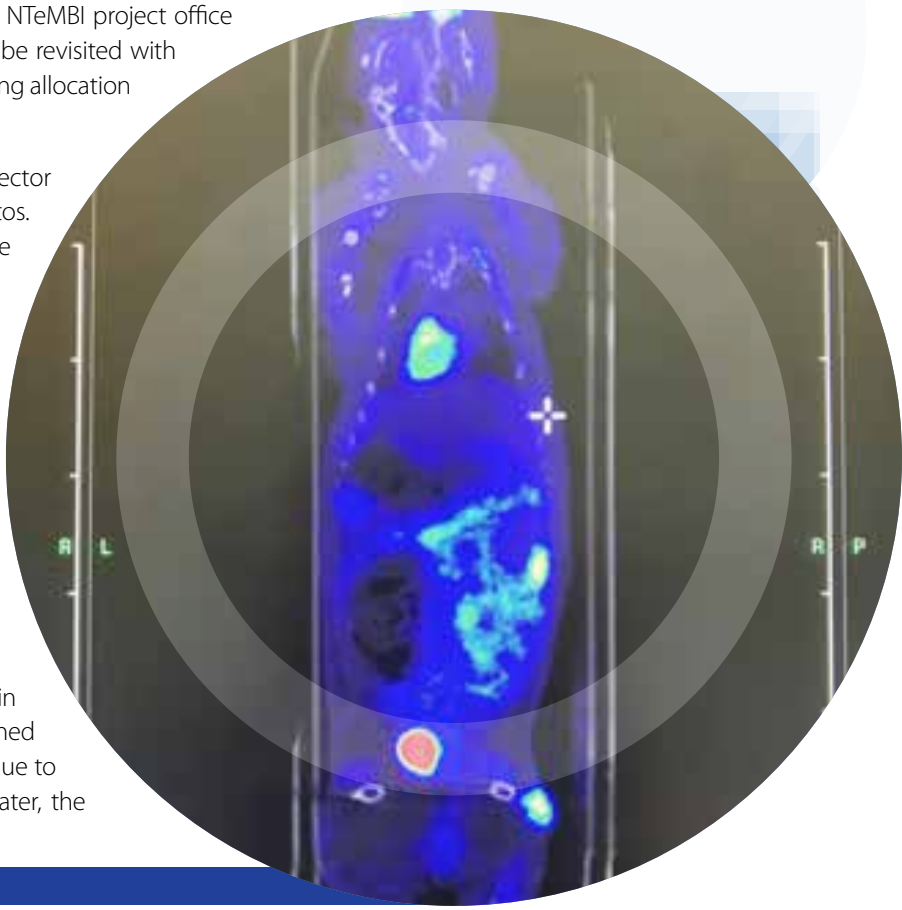
NUCLEAR TECHNOLOGIES IN MEDICINE AND BIOSCIENCES INITIATIVE (NTEMBI)

NTeMBI, is a DSI programme which was transferred to TIA in 2019 and is hosted and managed by Necsa. NTeMBI has operated successfully since its inception in 2011 by consolidating the expertise and established synergies between various islands of excellence in the field of nuclear medicine within South Africa, thus achieving the original mandate given to the programme by its originator, the DSI. In order to achieve this objective, the scope of the programme has been broad and inclusive and has, therefore, resulted in a representative platform of researchers and projects. The progress achieved over the past years enabled identification of strengths within the NTeMBI research community and the subsequent correlation of these capabilities against national technology and healthcare priorities. The Programme has made considerable strides in capacity building in an under-resourced industry as evidenced by the large number of graduates and internationally peer reviewed publications annually. In addition, a significant number of pre-clinical trials and first in human studies have been carried out on what can be viewed as a modest budget.

With its transfer into TIA, NTeMBI is currently in a feasibility phase under consideration for transition to a national TIA cluster. The goal is to exploit the high concentration of skills, expertise, infrastructure and companies across South Africa within the nuclear medicine environment through a coordinated and focused programme. Going forward, NTeMBI needs to be developed further in order to maximise return-on-investment by supporting projects that are best aligned to deliver high impact research with high socio-economic value. The initiative is aimed at stimulating and intensifying technology innovation within the sector as well as creating an enabling environment in support of increasing the competitiveness of the industry.

The transition process was expected to be completed by late 2020 with cluster initiation envisaged to take place on 1 April 2021. However, this did not take place, due to funding that had to be redirected to Covid-19 related projects. In the interim, a few projects of high impact were contracted and received continued funding in 2020/21. These projects were managed by the NTeMBI project office in conjunction with TIA. The cluster initiation will be revisited with TIA in the coming financial year when a new funding allocation becomes available.

The Malaria SIT Project aims to achieve malaria vector control through the release of sterile male mosquitos. The Malaria SIT project historically falls under the NTeMBI Steering Committee (it has a connection with radiation) but is financially separate. It is therefore managed by Necsa (NTeMBI is the 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 as well as five postgraduate students. The building of the pilot, (funded by the DSI) on the NICD site by a project team from Pelindaba Enterprise, has been completed. This facility is now operational and is the first mosquito mass rearing facility in Southern Africa. The launch of the facility (planned for February 2020) had to be postponed initially due to the unavailability of the Minister of Health and later, the Covid-19 lockdowns.



GluCAB compound

RECOGNITION

Dr. Janine Suthiram obtained her PhD in Medical Nuclear Science from the University of Pretoria.

Prof Jan Rijn Zeevaart achieved a B2 Rating from the NRF, becoming Necsa's first B-rated scientist. He is among 11 current rated researchers at Necsa – a full list can be found at the end of this Annual Report.

6.3.4 OFFICE OF TECHNOLOGY TRANSFER (OTT)

The OTT resides in the R&TD Division and is mandated in terms of the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act 51 of 2008) to facilitate the identification, protection and exploitation of intellectual property (IP) developed and owned by Necsa. The Department provides a leadership role in innovation matters, which include 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

Developments on some of the various technologies being exploited by Necsa in partnership with other entities (including with a subsidiary) are outlined below.

GluCAB ™ – a cancer theranostic drug

This technology has cancer diagnostic and therapeutic properties and is co-owned by Necsa and the University of the Cape Town (UCT). Both Necsa and UCT have a joint responsibility for securing the necessary funding to advance the technology to commercialisation. TIA seed funding of R400 000 was secured by Necsa for technology development.

Mining shroud detection technology

Necsa has patented a novel process based on gamma-emitting sources to aid in the detection of broken mining shrouds, which, undetected or poorly detected, may result in long downtime and associated opportunity costs in open cast mining.

This technology has strong potential for application in the mining industry for detection of broken or missing shovel shrouds. A detailed market study funded by Necsa's subsidiary, NTP Radioisotopes, was completed and has enabled the firming up of the value case for the technology. Funding campaigns are in progress to secure the required funding for technology development.

Cisplatin diagnostic companion

This cancer diagnostic technology is proposed to be used in conjunction with Cisplatin to unlock demand for Cisplatin chemotherapeutic (used in various cancer types). Funding of R10 million has been secured from NTP Radioisotopes to carry out phases I and II (a) clinical trials, subject to co-funding being secured from other sources. A fundraising initiative is underway to plug the funding gap of approximately R16 million to carry out phases I and II (a) clinical trials.

Plasma waste-to-energy technology

Necsa has developed plasma waste gasification technology up to proof of concept stage, and through external funding, has built a 0.5 ton per day demonstration system on site, which has ignited interest from potential industry partners (Refer to the R&TD section of this Annual Report for additional detail).

This technology can be demonstrated at different plant sizes for different feed materials, which include among others tyre waste, municipality solid waste, electronic waste and medical waste. Efforts are underway to secure further funding for technology development.

Negotiations with the Limpopo Eco-industrial Park (LEIP) for the possible use of its plasma gasification technology to realise LEIP's zero solid waste objective are in advanced stages. This relationship is envisaged to unlock the necessary funding to develop the plasma technology for various types of waste generated in eco-industrial parks.

Ga-68-PSMA – a diagnostic drug for prostate cancer

Ga-68-PSMA is a diagnostic drug for prostate and breast cancer.

A partnership was secured between the Nuclear Medicine Department at SBAH and NTP. SBAH expressed their intent to be the local off-taker for the product kit. Final stage works (including good manufacturing practice in kit formulation) are in progress under funding from NTP.

Neodymium Trifluoride (NdF3)

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. Neodynium fluoride is used mainly in the manufacture of permanent magnets for us in many commercial applications.

Necsa, in its efforts to support local Small, Medium and Micro Enterprises (SMMEs) and strengthen local manufacturing capabilities has availed its technology on Neodymium Trifluoride to Rare Earth Refinery, an SMME that has since able to unlock funding from TIA in order to build a demonstration plant and produce a market sample. The OTT played a lead role in securing this partnership and Necsa can look forward to realising some royalty payment if this technology becomes a commercial success. While this is a few milestones away, Necsa is currently deriving value through its hydrogen fluoride (HF) supply to RER as part of its subsidiary Pelchem in a mutually beneficial relationship.

Innovation disclosures and intellectual property

Innovation disclosures (IVDs)

The IP Management function of OTT records and reports the number of IVDs to the National Intellectual Property Organisation (NIPMO) on a bi-annual basis. Necsa continues to reach their yearly IVD targets, with a total number of eight IVDs for the 2020/21 financial year. The IVDs are undergoing review and it is expected that the outcome will make meaningful contribution to Necsa's IP portfolio.

IP advocacy

Cultivating of innovation ecosystem is one of the OTT's functions by increasing IP awareness via workshops and dialogue(s). Necsa in collaboration with the NIPMO hosted an IPWiseTM webinar that took place on 25 November 2020. The IPWiseTM initiative was created by NIPMO and implemented by South African Research and Innovation Management Association (SARIMA), to sensitise researchers at research institutions on IP, the IPR Act (2008) and technology transfer. This year's event was dedicated at helping researchers to understand the basics of IP, how to identify and protect it. Ms. Caro Buitendag from SARIMA gave a presentation on patents, copyrights, designs, trademarks, plant breeders' rights, and trade secrets with relevant examples. The technology transfer process and IP agreements were also a topic of discussion. The event was a great success.

IP management

Necsa co-filed a United Kingdom provisional patent application with NRF's iThemba Laboratories and UCT, 'Theranostic compounds' (Inventor: Professor Jan Rijn Zeevaart) relating to a novel radiopharmaceutical compound with the potential application in the early detection and treatment of cervical and oesophageal cancer. The Glucab patent has been allowed in Australia and granted in the US and Japan (Inventors: Dr. Cathryn Drive and, Professor Jan Rijn Zeevaart). The mining shroud detection patent (Inventor: Hills Andrie and Adendorff Jacobus) and "Mo-99 via the gamma n reaction" (Inventor: Professor Jan Rijn Zeevaart) was granted a research opportunity in Europe. These activities have since been reported to NIPMO in a more comprehensive manner.

National Research Foundation (NRF) rating status

Several scientists applied at the beginning of 2020 for renewal of their rating and two new applications were also submitted. In this regard Dr. Tshifhiwa Masikhwa and Dr. Renier Koen both received a Y2 rating from the NRF.

The table 13 below summarises the NRF rating of Necsa scientists

Name	Title	Rating	Validity period
R Prinsloo	Dr.	Y2	01 Jan 2016 to 31 December 2021
AD Pienaar*	Dr.	Y2	01 Jan 2018 to 31 December 2022
RD Mavunda	Dr.	C3	01 Jan 2019 to 31 December 2023
D Marais	Dr.	Y2	01 Jan 2019 to 31 December 2024
JJ van der Walt	Dr.	C2	01 Jan 2019 to 31 December 2024
P Bokov	Dr.	C1	01 Jan 2021 to 31 December 2026
FC de Beer*	Dr.	C2	01 Jan 2021 to 31 December 2026
AM Venter	Dr.	C2	01 Jan 2021 to 31 December 2026
TM Masikhwa	Dr.	Y2	01 Jan 2021 to 31 December 2026
R Koen	Dr.	Y2	01 Jan 2021 to 31 December 2026
JR Zeevaart	Prof	B2	01 Jan 2021 to 31 December 2026

*Individuals have resigned from Necsa

6.4 NUCLEAR COMPLIANCE AND SERVICES

6.4.1 SAFETY SERVICES

The Safety Services Department is responsible for health and safety functions which includes health and medical services, radiation protection, conventional safety support, emergency services and emergency preparedness as well as SHEQ management system compliance and auditing.

Highlights

Necsa's safety performance improved with the Disabling Injury Incident Rate (DIIR) at 0.27 compared to 0.56. There were no nuclear occurrence with International Nuclear Event Scale (INES) rating of above 0.

COVID-19

For the purpose of Covid-19 management, Necsa has since established the Necsa Group Disaster Management Task Team. Risk assessments and compliance inspections were conducted and a Covid-19 Policy approved to ensure mitigating measures are taken to reduce the risk of transmission.

The Necsa site has, for the reporting period, 132 reported cases of Covid-19 positive employees of which none have been confirmed as workplace related transmissions to date. Of these 132 cases, 129 recovered and three passed away.

Due to the Covid-19 lockdown restrictions that resulted in limited operations, SHEQ audits were not performed as per norm, however, to manage the compliance risk alternative compliance verification method was approved for implementation. Key aspects in each Department were verified for compliance in line with the approved alternative process.

Five emergency exercises were conducted in the reporting period to test readiness in case an emergency occurs. Emergency services to the community were limited to fire, rescue and trauma incidents due to the risk of Covid-19 transmission to the response personnel.

SAFETY CULTURE ENHANCEMENT

The Safety Culture Enhancement Unit is responsible for providing guidance, support and implementation of safety culture aspects at the Necsa Group. The term "Safety Culture" encompasses conventional, nuclear, chemical and security safety culture. During the year, various awareness sessions were conducted within the Necsa Group and all radiological facilities were audited against their departmental Safety Culture Enhancement Plans.

Following the NTP safety incident that occured in 2017, and the Independent Safety Culture Assessment (ISCA) by the IAEA during August 2018, a Corrective Action Plan, based on the IAEA ISCA Mission suggestions and recommendations were agreed and implemented during the reporting period. As part of the safety and security culture improvements, a Safety and Security Culture Forum was established to oversee, monitor, coordinate, share experiences and improve the Necsa Safety and Security Culture processes. An Annual Awareness Programme was agreed upon and regular awareness sessions are presented throughout the Necsa Group.

As part of improving the Necsa Group's safety culture, Necsa, in collaboration with the USA Oak Ridge National Laboratory, embarked on conducting "Changing Behaviour - Enhancing Nuclear Safety and Security Culture" workshops during the year.

A follow-up, e-mailed based Safety Culture Survey was conducted during March 2021 by the same consultants that did the survey during 2018 (Cranfield). The participation from the Necsa Group increased from the 2018 survey. The overall results can be summarised as follows:

(i) NTP increased with 0.15.

(ii) Necsa decreased with 0.15.

(iii) Pelchem decreased with 0.15.

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

Figure 3: Necsa Group's Safety Trends

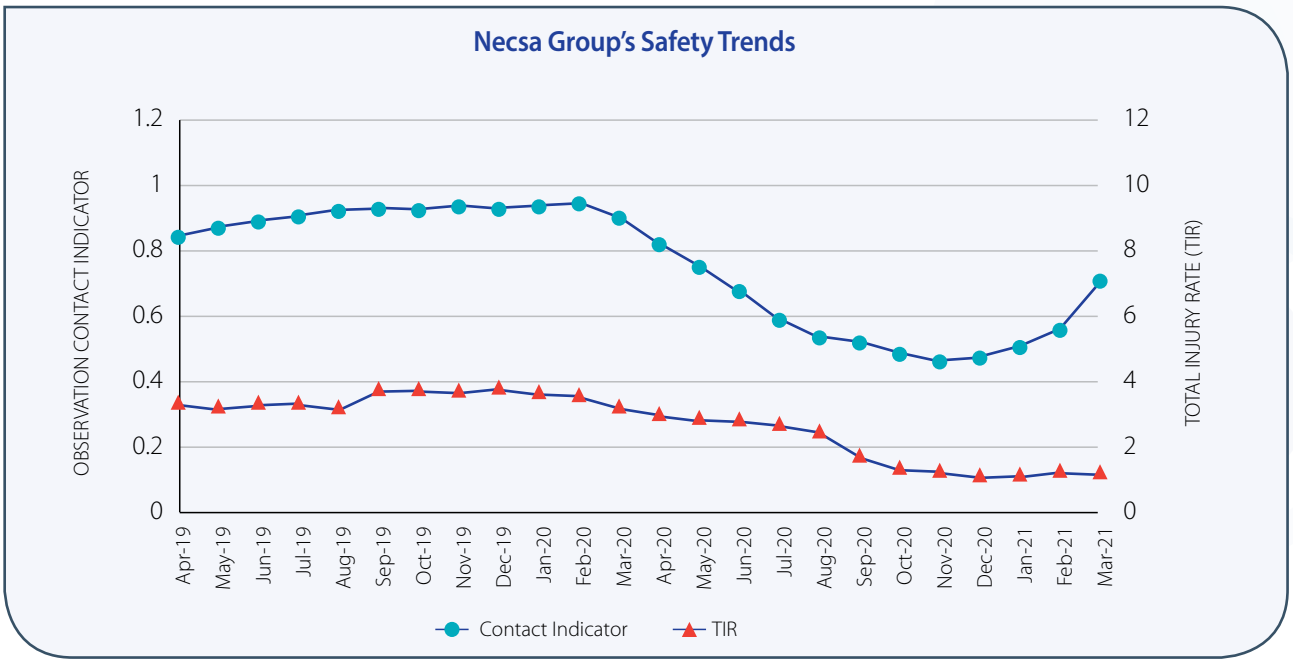


Table 14: Behaviour-based Safety Contact Indicator

Month	Total injury rate (TIR)	Observation contact indicator
April 2020	3.07	0.82
May 2020	2.87	0.75
June 2020	2.87	0.68
July 2020	2.72	0.59
August 2020	2.56	0.54
September 2020	1.75	0.52
October 2020	1.39	0.49
November 2020	1.29	0.46
December 2020	1.19	0.48
January 2021	1.15	0.51
February 2021	1.26	0.55
March 2021	1.27	0.71

6.4.2 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 categorisation guidelines combined with the current design basis threat.

In accordance with international best practices, security is achieved through implementation 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 unauthorised removal of assets including nuclear material and/or potential sabotage.

As a National Key Point (NKP) in terms of the National Key Points Act, (Act 102 of 1980) Necsa is evaluated on an annual basis to determine effectiveness of implementation of the NKP requirements. The NKP Office of the South African Police Service (SAPS) performs the security evaluation focusing on management of the security operations, administration of the security officers, and the adequacy of the physical protection measures. Due the Covid-19 pandemic during the reporting period, the NKP could not perfom the annual security evaluation at the Necsa site. A self-assessment was conducted and results thereof submitted to the NKP for evaluation.

The Necsa Joint Planning Committee, established in terms of the NKP Act (1988) brings together various stakeholders such as the SAPS, State Security Agency, Necsa, the Madibeng Municipality and the NNR.. The Committee met twice during the 2020/2021 financial year, but were in constant contact regarding Covid-19 protocols to provide guidance, and evaluate security and emergency processes for the site.

Security related system upgrades undertaken during 2020/2021 were as follows:

Table 15: Security related system upgrades

Area of upgrade	Work performed
Access control systems	Work started to migrate remaining facilities from Bes access to Cardax access control system including visitor management module.
Surveillance system	Planning of surveillance system upgrade on selected facilities.

Safeguards

Necsa performs Safeguards and Nuclear Non-Proliferation activities on behalf of the South African Government as delegated by the DMRE in terms of the Nuclear Energy Act (1998). This is required by the Nuclear Non-Proliferation Treaty as detailed in the Comprehensive Safeguards Agreement, both entered into with the IAEA in 1991. Safeguards implementation was further strengthened by the Additional Protocol to the Safeguards Agreement, signed in 2002.

Inspection activities and additional protocol

The year 2020 was a difficult year for implementing safeguards activities due to the Covid-19 pandemic which was experienced worldwide. The IAEA was not able to perform inspections in South Africa from March to May 2020 due to restrictions which were imposed by the Government regarding Covid-19 regulations. However, the IAEA still continued with safeguards activities from June 2020 to March 2021 without any interruptions.

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 2020 and were accepted as satisfactory by the IAEA.

Integrated safeguards as well as State-level safeguards have been in place in South Africa since 2015. South Africa is also pleased with the fact that from the 2019 Safeguards Implementation Report dated 29 April 2020, the Agency was once again in a position to draw broader conclusions regarding South Africa's nuclear activities by yet again confirming that our nuclear facilities and materials remain in peaceful use. The Agency has been able to do so since 2010.

This conclusion confirms South Africa's strong commitment towards non-proliferation as well as our ability to fully utilise nuclear energy and technology to contribute to our socio-economic development. Furthermore, it reiterates South Africa's continued strong cooperation with the IAEA. South Africa also remains committed to strengthening the verification regime, a commitment that is reflected in its continued participation in the member State support programmes as well as participation in the voluntary reporting scheme on nuclear material exports.

Non-destructive assay

The hot commissioning of the High Activity- Active Well Coincidence Counter (HA-AWCC) will be completed during the next reporting period. The project was initiated by South Africa in collaboration with the USA to develop a technique to quantify the U-residues at NTP. The State's declaration to the IAEA of U-residue generated from the molybdenum production process at NTP is currently still based on estimated values.

The draft hot commissioning report of the HA-AWCC to be shared with NTP was received by the Nuclear Safeguards Management (NSM) Department on 30 March 2021 from Oakridge National Laboratory (ORNL). The report will assist NTP during their submissions to NNR for approval of HA-AWCC routine operations.

Withdrawal of the national safeguards function from Necsa

The Minister of the DMRE acts as the national authority of the Republic for the purposes of the implementation and application of the Safeguards Agreement in terms of the Nuclear Energy Act (NEA, Act 46 of 1999). The Minister has delegated the authority for the above mentioned function to the Necsa Board of Directors. Necsa, on behalf of the Minister, ensures compliance to the safeguards requirements in accordance with the Comprehemsive Ssafeguards Aagreement and the Additional Protocol thereto concluded between South Africa and the IAEA in 1991 and 2002 respectively.

On 14 August 2020, the Minister informed the Necsa Board of Directors that the delegation for safeguards implementation will be withdrawn from Necsa and place within the Department. Necsa was requested to nominate officials to participate in the task team that will be involved with developing a road map for the transfer process of the safeguards function from Necsa to the DMRE.

Bilateral meeting between SA and the IAEA

The annual Safeguards Implementation Bilateral Meeting between the IAEA and the State was held on 15 – 16 March 2021 at Necsa to discuss safeguards implementation matters in South Africa. The bilateral meeting was attended by officials from the IAEA, the DMRE, Necsa and the Department of International Relations and Cooperation (DIRCO). The IAEA, DMRE and Necsa officials further visited Koeberg Nuclear Power Station (KNPS) on 18 March 2021 to continue discussions on Safeguards Implementation matters at Koeberg facilities.

6.4.3 LICENSING & SAFETY ANALYSIS

The Licensing and Safety Analysis Department's 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 Act (1999) as well as international treaties, conventions and agreements. Necsa has 41 nuclear installation licenses issued by the 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.

(i) Compliance with water permit requirements

Compliance is measured against Water Permit No. 1874B. The tables below reflect the effluent generated during the water year from 1 October 2019 to 30 September 2020 as well as the effluent discharges for the same period. 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 2020 to December 2020 period (calendar year) amounted to 1447 kg, which was lower by 1 350 kg compared to the previous year's (2019) of 2 797 kg. The monthly site limit was not exceeded during the year. Total fluoride emissions for the reporting period were 8% of the annual air emission license constraint of 17 695 kg/year.

(iii) Compliance with environmental requirements of the nuclear license

No nuclear occurrence related to the environment occurred during the 2019/20 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. The table below refers.

Table 16: Liquid effluent generated for period October 2019 to September 2020

Effluent destination	Volume (m^3)	Permit limit (m^3)	Percentage permitted (%)	Percentage change year-on-year (%)
Crocodile River	101 325	250 000	40.53	71.42
PE Pans 1-5	4 200	19 000	22.11	-65.63
PE Pan 6	2 000	8 500	23.53	751.06
PE Pan 9	2 690	15 000	17.93	-6.79
PE Pan 7	0	4 500	-	-
PE Pan 8	25	4 500	0.56	-98.87
CAF2	0	941	-	-
Total	**92 007**	**297 000**	**30.98**	**-13.14**

Table 17: Discharges of industrial effluent and low active effluent to the Crocodile River – October 2019 to September 2020

	Q4 (2019) Oct- Dec LE-REP-648	Q1 (2020) Jan-March LE-REP-0655	Q2 (2020) Apr-Jun LE-REP-0659	Q3 (2020) Jul-Sept LE-REP-0667	YTD Oct 2019 - Sept 2020
Industrial effluent(m^3)	21 363	30 142	27 018	19 523	98 046
Low active effluent (m^3)	1 356	632	651	640	3 279
Total effluent discharged to Crocodile River (m^3)	22 719	30 774	27 669	20 163	101 325
Dose impact (µSV)*	0.7509	0.7391	0.7632	0.7050	2.9583

Table 18: Modelled dose to the public

	2018 calendar year mSv	2019 calendar year mSv	2020 calendar year mSv
Liquid to Crocodile River	0.0025	0.0034	0.0029
Gaseous releases	0.0002	0.0006	0.00076
Total	0.0027	0.0040	0.0036
% of the annual public dose constraint (0.250 mSv)	1.086 %	1.597 %	1.457%

Modelled dose to the public

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

COMPLIANCE ASSURANCE ENFORCEMENT

Compliance with authorisations and regulations is implemented through the SHEQ-INS system. The SHEQ-INS System documents the Process-Based Licensing (PBL) processes which address the required NNR- approved processes and other legislation applicable to the Necsa group.

The SHEQ audit function is part of the compliance assurance of license and authorisation conditions. However, it was found that the implementation of license conditions specific to the facility was not receiving adequate attention in terms of compliance assurance. Hence, the Compliance Assurance Enforcement Inspectorate (CAE) was established in 2018/19 financial year with the mandate of ensuring that license and authorisation conditions from the NNR and Department of Health (DoH) among other authorities, are adequately and effectively implemented at Necsa facilities.

The two compliance assurance functions, i.e. SHEQ Compliance and Audits and CAE augment each other in the following manner:

- SHEQ Compliance and Audits: verifies implementation and compliance to SHEQ-INS requirements in order to ensure compliance to the system requirements.
- CAE: completes inspections in specific areas as deemed priority by Necsa Management to verify the detailed implementation against the Facility NIL, SAR, OTS, ISIP, relevant SHEQ-INS document and facility specific requirements relating to the identified area.
- Due to Covid restrictions and a limited staff compliment of two, CAE completed 20 desktop inspections at 16 facilities covering emergency planning and preparedness, maintenance programmes and security systems, as well as tracking, monitoring and reviewing facility actions plans from previous inspections to ensure corrective actions are identified to prevent recurrence.

6.5 PELINDABA ENTERPRISES

Pelindaba Enterprises is the commercial division within NECSA through which the rest of NECSA's products and services are provided to the industry. Pelindaba specialises in engineering and manufacturing of nuclear and high precision components.

6.5.1 PROJECTS AND CONSULTING SERVICES (P&CS)

P&CS is a Division within Pelindaba that provides project management and administrative support services to the Necsa group. It has the capabilities and expertise to put together project teams of specialists within Necsa, ensuring projects are integrated across the various engineering, scientific and fabrication divisions within Necsa.

Main highlights on projects managed by P&CS are as listed below:

Internal projects

- **Area 14 oil basement facility.**
- **Area 27 – cylinder de-heeling.**
- **Conversion plant.**

The above enlisted projects fall under the D&D projects that have been placed on hold due to Covid-19 working constraints.

Thabana Pipe Store Extension

- The Environmental Impact Assessment (EIA) final scoping report has been submitted to the Department of Forestry, Fisheries and the Enviornment (DFFE) on 9 March 2021. The Department had 107 days to provide a Record of Decision.
- The design is at its final stages and will be submitted to the NNR for approval by the end of May 2021.
- Upon approval from the NNR, Nuclear Manufacturing will commence with manufacturing of the steel pipe.

Security project upgrades

NECSA has embarked on upgrading security at the NECSA site over several years. As this initiative was congruent with the mission of the US Department of Energy (DOE), through the National Nuclear Security Administration's (NNSA's) Global Threat Reduction Initiative (GTRI) to protect nuclear and radioactive materials located at civilian sites worldwide. Sandia National Laboratory in certain selected cases, funds the NECSA security upgrade initiative on a project-by-project basis. Pelindaba Enterprises has been engaged by Nuclear Compliance Services (NCS) to perform project management services for selected projects.

The current tranche of security project upgrades stemmed from separate agreements entered into between NECSA and SNL from September 2016 to support the Security Services Department infrastructure with the physical security and security system upgrades.

The project upgrade entails the Final Phase of Site Migration to the Cardax Access Control System and the completion of construction of the concrete pathway around the perimeter of the NECSA site to improve the armed reaction response rate.

The Project as reported on is the following:

SNL PO 2075185 Revision 0 - Final Phase – Cardax Access Control System Migration at NECSA.

SNL PO 1709578 Revision 3 – Concrete Pathway at NECSA.

High-level project scope brief

The Site Migration Final Phase Project entails upgrading of all facilities on the NECSA site which are currently running on Blue Line Access. This includes the procurement of specific plant and equipment, installation and commissioning of the improved access control system around turnstiles for staff, visitors; and the completion of construction of the concrete pathway around the perimeter of the NECSA site to improve the armed reaction response rate on an upgraded concrete path.

NOTE: *Due to the nature of nuclear security and for confidentiality reasons, the detailed scope and design will not be specified herein. It could be made available, only a case-by-case basis and a need-to know-basis following Necsa's security processes.*

Overall project progress executive summary (site migration final phase)

The overall progress against the approved SNL Project Master Plan (PMP) – BASELINE Rev16 is 61% with an overall completion date of August 2021. This falls outside of the planned completion date of May 2021. This delay is due to works being stopped on site as a result of the nationwide lockdown implemented by the President of South Africa. This lockdown is a response to the Covid-19 pandemic. The delay has been mitigated by implementing an aggressive procurement approach.

Planned work (site migration project)

Access Control & Intrusion Detection (AC&D)

In the short term **(0 to 3 months)** the following works are planned on the AC&D portion of the project:

- Submission of BAC memo: this has been submitted and we are awaiting feedback from the Procurement Department.
- Appointment of panel of suppliers to perform the works.
- Commencement of migration of buildings P1800, P2000, P3100 (IT & NTP).

Visitor Management Module (VMM) Software

In the short term **(0 to 3 months)** the following works are planned on the VMM Software:

- Installation work by the supplier.
- Testing of the system: This includes testing the interface between the VMM and the Access Control Workflow.
- Commissioning of the VMM.
- Acceptance and handover by the Client – The planned completion date for this is 31 March 2021.

Overall project progress executive summary (concrete pathway)

The overall progress against the approved SNL Project Master Plan (PMP) – BASELINE Rev1 is 53% with an overall completion of January 2021.

The overall progress against the approved SNL Project Master Plan (PMP) – BASELINE Rev3 is 23% with an overall completion of October 2020. This is the revised completion date which falls slightly outside the planned completion date of September 2020 as contracted with SNL. This delay is due to works being stopped on site as a result of the nationwide lockdown implemented by the President of South Africa. This lockdown is a response to the Covid-19 pandemic.

Critical path: The critical path will be adopted as per the Project Board approval on the proposed **planned work (concrete pathway project):**

- INS 0800 requested pending availability of stakeholders.
- INS 0800 meeting took place and the checklist requirements in progress.
- 25% of VI5 concrete and steel work completed.
- 25% of VI5 concrete and steel work invoice signed for payment.
- Section 18&19 to resume as soon as INS-0800 is completed.

Table 19: PROJECT PROGRESS/STATUS HIGHLIGHTS

PROJECT TITLE	HIGHLIGHTS
Site Migration Final Phase	• Progress = 47%. • Works are complete on the first batch (P1700&P1701). Submission has been made to the BAC with regards to the remaining facilities. Outcome to be received during week ended 30 April 2021.
VMM	• Progress = 90% forecast completion by April 2021. • Testing of this installation is underway.
Concrete Pathway Project	• Progress = 53% forecast completion by February 2021. • Recruitment of Quantity Surveyor and Quality Engineer completed. • Request for quotes completed. • Site briefing completed. • Schedule updated.

6.5.2 MANUFACTURING

Pelindaba Manufacturing is an ISO 9001:2015 certified organisation that is also certified as an American Society for Mechanical Engineers (ASME) III supplier of Nuclear Manufacturing. The ASME III certification gives Nuclear Manufacturing the capability to design, fabricate, and assemble nuclear components which includes, but is not limited to, vessels, piping, supports, and tanks.

Nuclear 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.

Some of the main highlights on the projects currently being undertaken by Pelindaba Nuclear Manufacturing are listed below:

Necsa's Industrial Engineering Department

PSR Project

Koeberg is required by the NNR to perform their third ten-yearly periodic safety review (PSR/SRA-III) hence they approached Pelindaba Enterprises to develop and use the SRA-III report and outcomes thereof as an input into the integrated safety case to justify long-term operation beyond 2024. Koeberg have placed orders on project management specialists and nuclear engineers to the value of R53m. Pelindaba Enterprises is currently in the second year of executing the project utilising a mix of local and international based resources.

ASME III material procurement

Eskom placed orders for ASME material and welding consumables to the value of R3.5m. All orders were successfully delivered to Eskom Koeberg.

SCAW Dust Filtration Project

Pelindaba Enterprises have approached SCAW Metals to provide services on a turn-key projects ranging from design, manufacturing and installation for various components of a dust filtration system including fans, motor and a vortex. The successful delivery of the project will pave the way for the entrance into manufacturing the private sector.

PTR Tanks Dismantle and Removal Project

Eskom's KNPS have placed an order on Pelindaba Enterprises related to the unconditional release and dismantling of the old PTR Tanks.

IIT Projects

PEL's Industrial Isotope Technology (IIT) section offers several services related to industrial use of radioactive isotopes, backed by Necsa's expertise in engineering, chemistry, radiation sciences and nuclear safety. IIT provides services in the following areas:

- Plant inspections.
- Gamma radiation scans.
- Tracer studies.

IIT is currently providing radioactive diagnostic services in the local South African industry and the neighboring Southern African Development Community (SADC). The division has been securing business from Sasol from the past two years. New customers include Sapref, Engen and PetroSA.

Quality management system audits

ASME III Re-certification Audit

Nuclear Manufacturing passed an ASME III Re-accreditation Audit conducted from 16 to 20 November 2020.

SAIW ISO 3834 Welding Certification

SAIW ISO 3834 Welding Certification for Nuclear Manufacturing expired on 4 April 2020. Nuclear Manufacturing successfully went through a SAIW ISO 3834 re-certification audit on 8 July 2020.

ISO 9001:2015 Surveillance Audit

Nuclear Manufacturing quality management systems were audited against the ISO 9001:2015 Standard as part of the surveillance audit by the South African Bureau of Standards (SABS) from 2 to 3 November 2020.

Necsa's Manufacturing department

6.6 FINANCE DIVISION

The Necsa Finance Division is divided into three components i.e. Finance, Supply Chain Management and Information Technology.

6.6.1 FINANCE COMPONENT

The Finance Department is one of the major pillars of any organisation and an essential ingredient to a successful business. An essential task of the Finance Department is concerned with managing daily financial decisions balancing them with long-term company objectives. The long-term, medium-term, and short-term goals are hence synchronised through the company's financial predictions that are provided by the Finance Department. It is increasingly important that the management in Finance be strategists, assisting to shape overall strategy and direction, and catalysts, instilling a financial approach and mind set throughout the organisation to ensure that the other parts of the business perform better.

The Finance Department is responsible for the stewardship and control of physical and financial resources within Necsa. In this regard, the tension is to try and balance the four key priorities i.e. cost reduction, compliance, efficiency and growth. The activities expected from the Necsa's Finance Department cover a wide range of activities from basic record keeping to providing strategic decisions to the entity. The Finance Department oversees the Necsa processes at micro and macro levels. Finance plays a significant role in the decision-making process, the vision, mission and strategy of a company remain the guiding principle. Part of the importance of a Finance Department lies in its function of aligning daily financial decisions with longer-term company objectives. Long-term, medium-term and short-term goals should be effectively synced with a broader vision expressing the mandate of Necsa in financial terms.

Corporate Finance Department

The company's liquidity, working capital as well the investment strategies are managed by this Corporate Finance Department. 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 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 of financial assets, post -retirement medical aid liability funding, insurance, bankers and other financial stakeholders, optimising the financial performance including but not limited reporting and liquidity. 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. The core principles are prudence and good corporate governance. Issues of concern are reported to the decision makers such as EXCO, the Audit and Risk Committee (ARC) and the Board of Directors.

The Corporate Accounting Department is responsible for the management of accounting cycles including Payroll, Accounts Payable, Accounts Receivable, Inventory Control, as well as Treasury and Cash Management/Treasury. 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 and use the Financial System Department to achieve this goal. The majority of the company's policies and procedures are prepared and reviewed by this Department as it is a custodian of accounting cycles.

The optimal functioning of this Department is currently constrained by the funding, liquidity and solvency issues as the nature of the organisation has fixed costs which limits the implementation of austerity measures and creation of new growth opportunities due to the weakened Balance Sheet. The current recession, fiscus position as well Covid-19 has further exacerbated the already distressed Necsa's cash position and management is diligent in implementing various measures to turnaround the entity by exploring operational efficiencies.

Business Unit Department

The Business Unit 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. It is the duty of this Department to put financial controls in place, it is prudent to have checks and balances in place by performing reconciliations on a monthly basis. The Business Unit Department is also responsible for the record keeping, assisting line management in

preparation of the Medium Term Expenditure Framework (MTEF) budgets, forecasts, variance analysis, and reconciliations and related administrative functions. These functions must be executed by ensuring that the information that is provided is complete, accurate and produced in a timely manner.

Working closely with internal auditors, assurance is provided that accounts are fairly represented and fraudulent transactions eliminated. The Business Unit Department is also involved in providing core information that is utilised in the preparation of the Necsa Group's AFS.

There are some hurdles with regard to competencies emanating from the ability to recruit and retain expertise in this Department mainly due to the cashflow challenges and other organisational processes.

Financial Compliance and Reporting (FCR) Department

At a high level, the FCR is a function that takes the raw accounting entries from the ERP system and transforms it to practical AFS that are understandable by all users and stakeholders. The FCR Department's role includes, but is not limited to, timeous preparation of Management Accounts for EXCO meetings, quarterly reports to ARC and Board meetings, the DMRE and National Treasury. It is responsible for the preparation of standalone Company's AFS as well as Consolidated Necsa Group's AFS. The AFS are prepared in compliance with Treasury Regulations, International Financial Reporting Standards (IFRS), the PFMA (1999), the Companies Act (2008) and other relevant legislation and practices.

The Costing and Project Section is mainly responsible for 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.

The responsibilities of the Compliance Section include, but are not limited to, identifying the key risks that are faced by the Finance Division to ensure that measures and internal controls are put in place to mitigate or eliminate the current and emerging risks. Necsa has an overarching Risk Department that reports directly to the GCEO. This section is also responsible for tracking and reporting on fruitless and wasteful expenditure, irregular expenditure as well as loss register to mitigate and prevent recurrence. These incidents are reported by line management and reports are compiled for the Board of Directors through the ARC.

An annual highlight of the FCR Department is the planning, coordination and execution of the year-end reporting and statutory audit by AGSA leading to the publication of the Necsa Group's AFS and Annual Report.

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.

The current challenge with regard to the FCR Department is that it not well capacitated to optimally function and discharge its fiduciary duties.

Financial Systems

The Corporate Finance Department maintains the full integrity of the 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 software quality control. The 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.

This Department is in charge and equipped to extract any reports from the system as well as to design new reports that may be required by the Group on an ongoing basis.

6.6.2 Supply Chain Management

Summary

The Supply Chain Management (SCM) Department develops relevant policies and procedures while also managing compliance with these legislation and codes of good practice. In addition, SCM provides central receiving and inventory management, strategic sourcing and contract management.

PROCUREMENT SPEND IN 2020/21

Table 20: Summary of orders per division

Division	Amount
Engineering & Tech. Services	R 15 526 011,01
Finance	R 11 953 313,81
Human Resources and REAM	R 2 105 374,65
Nuclear Compliance Services	R 1 074 154,28
Office of the CEO	R 471 492,94
Operations	R 6 959 843,00
Pelindaba Enterprises	R 6 094 793,90
Research and Tech Development	R 28 700 422,32
Special Projects Necsa/Niasa	R 2 868 123,24
Un-allocated	R 182 453 183,92
NTP	R107 180 517.28
Pelchem	R70 525 420,46
Grand Total	**R 436 326 928,69**

Necsa's Manufacturing department

Table 21: Top ten suppliers to the Necsa Group

No.	Supplier	Product/service rendered	Value
	CERCA	FUEL PLATES	R110 085 727,25
	ZEDA CAR LEASING	CARS	R22 621 864,19
	ADAMS AND ADAMS	LEGAL SERVICES	R11 410 025,26
	TRACTEBEL ENGINEERING SA	ENGINEERING SERVICES	R5 549 000,00
	OMNI AFRICA	VICTRON MULTIPLUS II INVERTER	R5 525 118,00
	SWIFT EXPRESS & WAREHOUSE	SUPPLY DAIRY; FROZEN GOODS; DRY GOODS AND FRUIT AND	R4 000 000,00
	NEO TECHNOLOGIES	LAPTOPS & COMPUTERS	R3 447 916,06
	GRIESEL CONSULTING & ADVISORY	CONSULTING SERVICES	R3 447 800,00
	LECO AFRICA PTY LTD	ONH836-HMC	R2 841 112,32
	FLAMITE PTY LTD	COAL	R2 594 725,00
TOTAL			**R171 521 288,08**

Table 22: Supplier database

Vendor type	Registered	Vendors put on hold	New registrations and vendors made active
EC – Active vendors (Registered on database)	2436	3	116 + 4 =120
ZZ-Vendors (Cash vendors registered on database)	1169	0	0
Total active vendors registered on system	**3605**		

Broad-based black economic empowerment (B-BBEE) spend

In compliance with the B-BBEE Act (Act 53 of 2003), Necsa fosters business relationships with companies that include black participation in their business structures. Necsa's Policy for Preferential Procurement from B-BBEE Companies is based on the Department of Trade and Industry (dti) Codes of Good Practice.

Table 23: B-BBEE procurement spend group

Procurement spend	Value
Total B-BBEE spend	R326 423 279,54
B-BBEE recognition spend	R443 102 955,80

B-BBEE verification 2020/21

The B-BBEE verification process for the new financial year The BBBEE verification process was concluded and Necsa achieved a non-compliance status with a BEE procurement recognition 0.00%

6.6.3 INFORMATION TECHNOLOGY INDICATORS

The Information Technology (IT) function at Necsa is provided through Systems and Information Management in the Office of the Chief Information Officer (CIO). The IT function mainly provides the following services to Necsa and its subsidiaries: Pelchem and NTP, to a limited extent:

- Enablement of business objectives through the use of ICT.
- The development and maintenance of software applications.
- The implementation and maintenance of enterprise wide systems and infrastructure such as network, e-mail and Internet.
- The provision of telecommunication services including landline, cellular communications and services.
- The provision of support services for any problems/faults on any other related IT issues.
- IT management and governance.
- Information security.

IT governance

- 2020 presented the most challenging environment for Necsa as is with the rest of the country due to the Covid-19 pandemic and the subsequent extended national lockdown. The IT Department became the first point of call and response in setting up and supporting Necsa in carrying its business and maintaining a sound IT Governance Framework.
- IT provided among other things, the following response services: Remote business applications and resources, virtual business interaction and online training.
- The Auditor-General conducted the annual audit on general computer controls. There were no repeat findings.

IT projects

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

- Implementation of digital signature.
- SharePoint upgrade.
- Email system upgrade.
- Development of in-house software applications for Covid-19 training, screening and tracking of staff accessing the Pelindaba site.

INFORMATION TECHNOLOGY PERFORMANCE

Table 24: 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.	96.90%	99.99%
Average storage capacity	This metric measures the availability of space on the Necsa storage area network.	60.57%	<75%
Average turnaround percentage	This metric measures the percentage of problems resolved within a specified period.	75.20%	90 %

6.7 PELCHEM SOC LTD

Mr IVAN RADEBE

Managing Director

PELCHEM MANAGING DIRECTOR OVERVIEW

The preceding year was the toughest year for the country in recent memory and Pelchem was greatly affected as it had only ten months of effective trading due to the national lockdown to fight the Covid-19 pandemic. The pandemic plunged the global economy into recession and the local manufacturing sector contracted by 11%. The resilience and agility of the company was severely tested and I would like to pay homage to management and employees for their co-operation on the quick and decisive measures to save the company.

Cash and cash-flow management measures included freezing variable remuneration costs and salary pay date moved to last day of the month. In support of the government efforts to contain the pandemic, Pelchem repurposed one of its facilities to produce World Health Organisation (WHO) recommended sanitisers and have since been supplying the country. Despite the extremely challenging trading conditions, Pelchem ended the year with a loss of R66m against a budgeted loss of R51m.

I am especially proud of the company ending the year with zero disabling injury rate and full compliance with its operating licence condition as the result of increased training and cooperation between everyone across the fluorochemicals value chain.

The operationalisation of the State-owned pharmaceutical company - Ketlaphela Pharmaceuticals SOC Ltd - has progressed very well; successfully achieving all of its milestones post approval by the Minister in 2020 and it is establishing offices and securing all regulatory approvals to start supplying pharmaceutical products by the middle of year 2022.

The short-term priority of Pelchem is completing the refurbishments of its current sub-economic production facilities in the Hartebeespoort Dam area and in the medium-term is to invest through partnerships in the development of commercially scaled production facilities to enable sustainability of the company. To that end, approval has been granted by the minister for the expansion and growth project to proceed.

I would like to thank our Minister, the Department and the Board for their guidance and support, our stakeholders including customers and suppliers, for their continued support; our staff the Pelichamps, we recognise and appreciate your valuable contribution to the organisation.

Stay safe.

Ivan Radebe

Managing Director

PELCHEM SOC LTD PROFILE

Pelchem SOC Ltd - Pelchem - is a world class manufacturer and supplier of fluorochemicals to a wide variety of market segments. Pelchem was corporatised in 2007 as a wholly-owned subsidiary of Necsa, however, it has been in operation for over 36 years developing its own technology and experience. Pelchem is a critical supplier of hydrofluoric acid and fluorine to the automotive, refineries, stainless steel, plastic packaging as well as the mining sector, both in South Africa and globally. Pelchem further exploits its patented technology through the production and supply of high value specialty products exported into the fluoropolymer, pharmaceutical and semiconductor industries.

Pelchem's core mandate is to

- Manufacture and supply of fluorochemicals for local and global markets.
- Retain, maintain critical technology, IP and strategic capabilities and skills relating to the production of fluorochemicals.

Pelchem has two subsidiaries:

- Ketlaphela Pharmaceutical SOC Ltd – for the manufacture and supply of pharmaceutical products.
- LESA SOC Ltd (Dormant).

Vision

Global manufacturer and supplier of commodity and specialty chemicals.

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.

Values

- Safety
- Integrity
- Innovation
- Reliability
- Excellence.

Pelchem SOC Ltd, a global supplier of fluorine based specialty chemicals.

PELCHEM HIGHLIGHTS AND LOWLIGHTS FOR 2020/21

HIGHLIGHTS

- Ministerial approval for Ketlaphela Pharmaceuticals SOC Ltd.
- Successful launch and commercial production of 80% alcohol-based, WHO recommended sanitisers.
- Improved revenue (cash) collection.
- Zero DIIR achieved.
- No environmental incidents.
- Successful ISO 9001:2015 and ISO 14001:2015 audits.
- Pipeline of business development opportunities that will serve as a catalyst to profitability.

LOWLIGHTS

- Missed production targets due to the increasingly deteriorating plant performance.
- Missed sales due to customers' lockdown and reduced demand.
- Loss of man-hours due to national lockdown.
- 61, 5% vacancy rate at management level, inability to fill positions due to constrained financial position.
- Contracting manufacturing sector in South Africa.
- Lack of investment in upgrading the production infrastructure.
- Increasingly unreliable supply of utilities, average loss in production by 25%.

KETLAPHELA PHARMACEUTICALS SOC LTD PROFILE

Ketlaphela Pharmaceutical SOC Ltd (Ketlaphela) was created in response to the Cabinet's directive in 2009 for South Africa to have its own State-owned pharmaceutical company. Ketlaphela was established in 2015 as a wholly-owned subsidiary of Pelchem SOC Ltd. The mandate of Ketlaphela as a wholly State-owned pharmaceutical company is to contribute to implementing the government developmental objectives not fully served by the private sector through the localisation of Active Pharmaceutical Ingredients (APIs) and final formulated pharmaceutical products mainly for communicable diseases such as HIV/AIDS, Tuberculosis (TB), Malaria and later on lifestyle diseases.

Ketlaphela has one subsidiary:

- Ketlaphela Pharmacare SOC Ltd – Supply of pharmaceutical products for the burden of diseases.

Vision

- To be a leader in the delivery of quality and affordable medicines to the local market.

Mission

- To be the preferred supplier of local pharmaceutical products.
- Deliver on our promises, safely and in an environmentally responsible manner.
- Driving growth through excellence, innovation, performance and customer focus.

Values

- Quality
- Integrity
- Reliability
- Commitment.

EXPANSION AND GROWTH PROJECTS

Pelchem's long-term sustainability is underpinned by the commercially scaled Fluorochemicals Complex (Project Thuthukani). The execution of this project is dependent on partnerships and investment to localize production and increase beneficiation in the country. Project Thuthukani is the development of a commercially scaled Fluorochemicals Complex (F-Complex), anchored by a 30,000tpa of high purity Hydrofluoric Acid (HF) and commercial-scaled downstream specialty plants. At commercial operation in 2025/26, Pelchem will realise revenues of over R1bn per annum at 6% profit margins and improve Pelchem's market share from 0,065% to 1, 2%. The economically scaled plants will serve the global fluorochemical market.

Short-term strategic initiatives with bankable investment cases will be executed to generate revenue of R107m by 2022/23. These include refurbishments to improve plant availability to >86% and development of new high-valued new products.

Pelchem transporting tank

6.8 NTP RADIOISOTOPES SOC LTD

Interim Managing Director Overview

Mr Thabo Tselane
Interim Managing Director: NTP Radioisotopes SOC Ltd

The 2020/21 financial year was dominated by Covid-19. Shortly after the WHO declared a pandemic, NTP began to take proactive measures that helped the company to safely and sustainably continue with production, avoiding any unscheduled stoppages. This allowed NTP to report a profit at year-end, which is a remarkable achievement particularly under such challenging conditions.

At the heart of this process was NTP's integrated Sustainable-Return-to-Service (SRTS) Programme that was launched in 2019/20. The SRTS provided a framework to ensure the sustainable radiochemical operations of the business and has allowed NTP to rebuild a reliable supply of key medical radioisotopes to local and global customers. The SRTS process also emphasised that safety was at the heart of NTP's business. Using the systems and structures defined by the SRTS, NTP was able to establish a Covid-19 Crisis Management Team well in advance of the national lockdown. It was through the efforts of this team and NTP's incredible management and staff that we were able to not only face the many new and unexpected challenges the 2020/21 presented, but we were also able to continue to make advances towards our medium-term strategic goals.

Even though this year did not present the customer growth we had hoped for – an impossibility where air traffic came to a near halt in many parts of the world, in a market that is reliant on on-time global delivery of time-sensitive and hazardous cargo – NTP not only maintained all of its hard-won customer and sales growth achieved during the previous period, but continued to meet all of its customer orders for the 2020/21 year, even showing growth in API sales and in production volumes. NTP Radioisotopes and its subsidiaries also posted unqualified audits across the board for a third year in a row (the Group received clean audits in 2016/17). I am proud to lead an organisation that continues to set the standard for responsibility, transparency and accountability, while continuing to positively transform lives at home and around the world.

NTP's return to sustainability and its significant achievements during the past year would not have been possible without the stalwart stewardship of outgoing Group Managing Director, Mrs Tina Eboka. It has been a privilege to work alongside Mrs Eboka during this transition period, while she also continued to lead a Necsa-group task team looking at Necsa's restructuring and rationalisation efforts.

While the 2020/21 year saw an impressive company performance in extremely difficult circumstances, we also have to acknowledge the terrible impact of the pandemic on our own people, in particular the loss of two of our NTP colleagues.

Thabo Tselane
Interim Managing Director: NTP Radioisotopes SOC Ltd

NTP OVERVIEW

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 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 commercial producers of Molybdenum-99 and Iodine-131. NTP is a pioneer in the production and processing of LEU-based medical radioisotopes and has helped to make 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 the SADC region. In 2005, in partnership with the NRF's iThemba LABS, 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 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 partnered with the Australian Nuclear Science and Technology Organisation (ANSTO) in terms of which NTP's LEU-based technology would be used to construct a large-scale Mo-99 production facility at ANSTO.

Also in 2012, NTP began the first African-based production of the non-carrier-added (n.c.a.) beta-emitter Lutetium-177 (Lu-177), which has diagnostic and therapeutic applications. NTP later facilitated the first medical procedure in South Africa using Lu-177 n.c.a. labelled with prostate-specific membrane antigen (PSMA) for the treatment of prostate cancer. In 2020 NTP processed its first export sale of Lu-177 n.c.a. API to ITM in Germany, and launched a new diagnostic product, F-18 PSMA.

6.8.1 NTP GROUP SUBSIDIARIES AND ASSOCIATE COMPANIES

6.8.1.1 AEC-Amersham SOC Ltd

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

6.8.1.2 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 NNR, the DMRE, the DOH as well as the Department of Transport (DOT). The company maintains ISO 9001 certification.

6.8.1.3 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 exports to over 70 countries with a focus on Africa, the Middle East, Southeast Asia and Australasia. Gammatec's equity associate, Oserix SA, based in Belgium, services the gamma radiation isotopes market in Europe, North Africa, and the Americas.

6.8.1.4 Gamwave Gauteng (Pty) Ltd

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

Highlights

- NTP was able to implement a specialised Covid-19 Crisis Management Team in mid-March 2020, which allowed the company to rapidly introduce interim and medium-term risk mitigation and safety practices in the workplace, including work-from-home programmes and reduced staff presence on site. As an essential products and services provider, NTP was able to safely continue working throughout the various national and regional lockdowns that were implemented in 2020 and continued to deliver important medical products and supplies to its clients.
- Despite a challenging year due to Covid-19 and extensive flight restrictions from South Africa, NTP Group sales showed a profit of <32,39m> as well as year-on-year growth in all API product ranges (Mo-99, I-131 and Lu-177 n.c.a.) and in irradiation services and industrials.
- NTP recorded the first API Lu-177 n.c.a. export sale to ITM in Germany.
- NTP launched new diagnostic product F-18 PSMA in the South African market via AEC-Amersham.
- NTP realised 1 million Disabling Injury-free hours, and injuries on duty declined by 50% compared to the previous financial year.

- Gaseous environmental releases were below 2% of allowable levels.
- ISO 9001:2015 certification was successfully transferred from DEKRA to Bureau Veritas.
- A Cranfield Safety Culture Survey was concluded and a marginal improvement in the NTP Safety Culture was registered compared to previous assessment.
- AEC-Amersham achieved B-BBEE Level 3.
- Gammatec achieved a net profit for the financial year, which represents a significant achievement when taking into account the impact of lockdown on the company's operations particularly during the first quarter of the 2020 financial year.
- NTP and all its subsidiaries once again received unqualified audits from the Auditor-General.

CHALLENGES

- Reduced availability of international flights due to the Covid-19 pandemic continued to constrain customer orders owing to the time-sensitive nature of NTP's API products. These issues were worked on through the year by NTP's Covid-19 Crisis Management Team together with NTP Logistics.
- NTP was deeply saddened at the loss of two of its people due to Covid-19.

Disease Detecting Radiopharmaceuticals

7. HUMAN RESOURCES AND REAL ESTATE MANAGEMENT

The primary mandate of the Group's HR Department is to provide strategic HR support services that should enable the Necsa Group to build organisational capabilities to achieve its strategic objectives and thereby deliver on its mandate. Flowing from this mandate, the derived strategic goal of Necsa Group's Human Resources is to pursue excellence in human capital management practices in order to positions Necsa Group as an employer of choice.

STRATEGIC OBJECTIVES

- To ensure continuity supply of core and critical skills required to meet the strategic objectives of the organisation by having a minimum of one successor in each critical position.
- To promote a culture of high performance by ensuring that all employees' performance have been appraised and have signed performance contracts in order to facilitate achievement of the Necsa Group's strategic goals.
- To create an organisational culture that promotes employee engagement and satisfaction.
- To achieve the Necsa Group's targets for transformation, social, and economic responsibility by promoting a culture of compliance.
- To achieve sustainable growth by meeting the evolving needs of our customers in training and skills development through increasing our market share in the group, nationally and in Africa.

Key service delivery pillars

- Integrated Talent Management Strategy.
- Enabling organisational culture that promotes employee engagement.
- Leadership and management development.
- Sound employee relations.
- Well-embedded performance management and reward system.
- Compliance with statutory requirements and internal prescripts.
- Sustainable employee wellness and benefits programmes.

OVERVIEW

Key HR challenges

The main HR challenges faced by the organisation is the ability to achieve transformational objectives in certain key areas of the organisation where diversity is lacking. This challenge has its roots in among others, the decline in the overall headcount aimed at containing the salary bill on the one hand, and the low level of natural staff attrition on the other which inhibits the organisation's ability to aggressively bring in young Black talented recruits.

The situation is compounded by the challenge of ageing workforce, which poses a serious risk of knowledge loss which calls for effective measures to be put in place to manage that risk. To that end, effective implementation of the organisation's talent management framework to facilitate the attraction, retention, and development of young workforce that will take this organisation forward has become critical.

HR priorities for the year under review

Against the challenges and opportunities identified, the following high-level HR priorities were identified as key drivers that will contribute towards the achievement of Necsa's strategic objectives, namely:

- Development and Implementation of Integrated Talent Management Programme.
- Developing and implementing programmes to ensure performance management culture is fully embedded within the organisation.
- Development and implementation of programmes for creating an environment that is conducive to sound employee relations and wellness.
- Implementation of a Leadership Development Programme.

Workforce planning framework and key strategies

Work force planning is seen as one of the critical cornerstone of sound HRM and plays a vital role in determining capacity for both current and future HR requirements for the execution of the strategic priorities of the organisation.

However, as those requirements are established within the context of serious financial constraints, it called for the development and implementation of a structured and objective instrument for use in the classification of jobs as either critical or support to aide prioritisation and rationing of the limited budget. Accordingly, the framework for identification of critical role was thus developed as a model for assessing the criticality of every role within the organisation using the value creation framework to arrive at role mapping chart which categorised all the roles within the organisation as either critical or support function.

Employee performance management framework

The achievement of Necsa's strategic objectives is dependent on individuals and groups achieving results which are linked to the organisation's strategic objectives. Performance management provides a framework for alignment of employees' performance to the organisation's strategic objectives, as well managing the performance of all employees to instil 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.

Talent management

Necsa focuses on creating a team-centred culture where our leadership and teams are aligned, engaged, and inspired to perform at their best and take personal accountability for the delivery of results and are rewarded and recognised accordingly. In order to achieve this, Necsa has prioritised the identification, development and retention of a diverse, mobile and motivated workforce. The Necsa Talent Management Framework integrates the identification, review and optimisation of talent in order to identify a Necsa Talent Pipeline, facilitate succession planning, and to ensure development of talented employees.

This integration will help in attaining the following specific objectives:

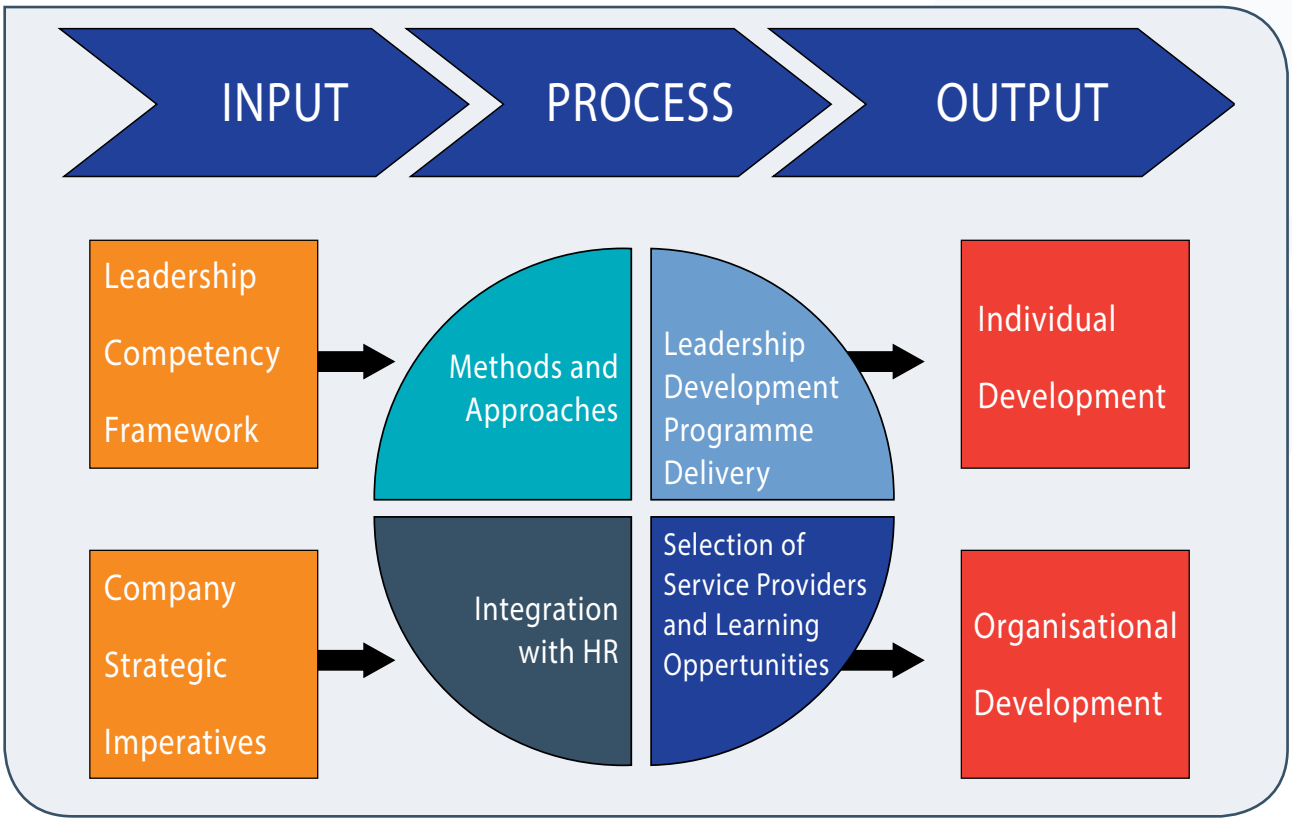
- Building a sustainable organisation with the right skills and capabilities to execute the Necsa Strategy and to be able to respond to potential growth opportunities.
- Providing a common methodology across the Necsa Group to facilitate the assessment and review of talent.
- Developing an understanding of the capabilities and potential of our talent at all organisational levels to enable systematic succession planning.
- An annual review of the health of talent pipelines against current and future business requirements. This is to ensure adequate succession availability for key roles as well as to inform any potential retention strategies of these roles.
- Proactively identifying gaps in the supply and development of critical talent including action planning and execution to address major risks.
- Integrating with other people procedures such as the performance management process to build capability to ensure succession intelligence.

Leadership framework

Leadership excellence is one of the main key drivers of business performance. Like any other intervention, leadership development must be aligned with the strategic imperatives of the organisation and HR systems if benefit is to be derived from the initiative.

To meet its mandate, the Necsa Group needs skilled leaders at supervisory, management, and executive levels. These leaders define and communicate expectations, roles, and responsibilities to employees, provide resources for employee development, and recognise employee accomplishment. Setting the direction and aligning employees' roles with organisational strategic imperatives forms part of leadership responsibilities.

Figure 4: Leadership framework



7.1 EMPLOYEE WELLNESS PROGRAMMES

Necsa's Employee Wellness Programme continues to play a significant role in providing the needed psychosocial and practical assistance and support to employees and line management, managing the wellbeing of employees who are emotionally unwell.

For the reporting period, problems relating to relationship issues contributed to the most common presenting problem category during the review period. Employees' relationship issues comprise psychosocial difficulties such as interpersonal conflict, infidelity, emotional abuse, separation, and marital interference by family members. Individual utilisation has significantly increased as a result of the lockdown during the past financial year.

7.2 KNOWLEDGE MANAGEMENT (KM)

The knowledge management activities within Necsa are guided by an approved policy, strategy and a number of key processes. The key processes are implemented through the activities within three functions of the KM Department: Knowledge Management Function, Library Services and Document Management & Archiving Services. The activities within the Department were significantly scaled down due to the impact the national lockdown had on KM activities during the financial year.

7.2.1 Knowledge Management (KM) Function

A key process within the Department is the performance of Knowledge Loss Risk Assessments throughout Necsa to assess the risks associated with the loss of knowledge of certain key and critical roles. Line management is alerted in all instances where high risks of loss of knowledge are prevalent for them to take appropriate mitigating action, which should include development and implementation of Knowledge Retention Plans. These plans outline the knowledge at risk, identify successors and require timelines for the transfer of knowledge to successors.

In addition to the above process, management is also required to complete an extensive Tacit Knowledge Questionnaire in all instances of high risks of loss of knowledge. This questionnaire seeks to codify tacit knowledge that does not reside anywhere in procedures and work instructions.

Library Services

The function is responsible for the management of the Necsa Library and all the associated processes. It also serves as a point of liaison for fraternal organisations such as the National Library, university libraries, etc. and provides the facilities of inter-library loans with those bodies.

The Necsa Library also serves as the central distribution hub for newspapers, engineering and scientific articles and scientific journals. The Necsa Chief Librarian is the designated International Nuclear Information System (INIS) Liaison Officer for South Africa at the IAEA with the responsibilities of updating the INIS system with relevant nuclear information emanating from this country.

Document Management & Archiving Services

This function is responsible for all Archiving and Document Management within the Necsa Group, in compliance to the business requirements of security of archived documents and retention of all material.

7.3 EMPLOYMENT STATISTICS

Necsa Group staff composition for the year ended 31 March 2021

The Necsa Group's total staff complement inclusive of contract workers and employees of AEC Amersham as at 31 March 2021 was **1 825** as compared to **1 821** reported for the comparative period of March 2020. Of this total, **69 are** contract employees, comprising of 44 males and 25 females while the remaining **1 756** are permanent employees. This information is depicted in the below which reflects the distribution in terms of race and gender.

Table 25: Necsa Group staff composition for the year ended 31 March 2020

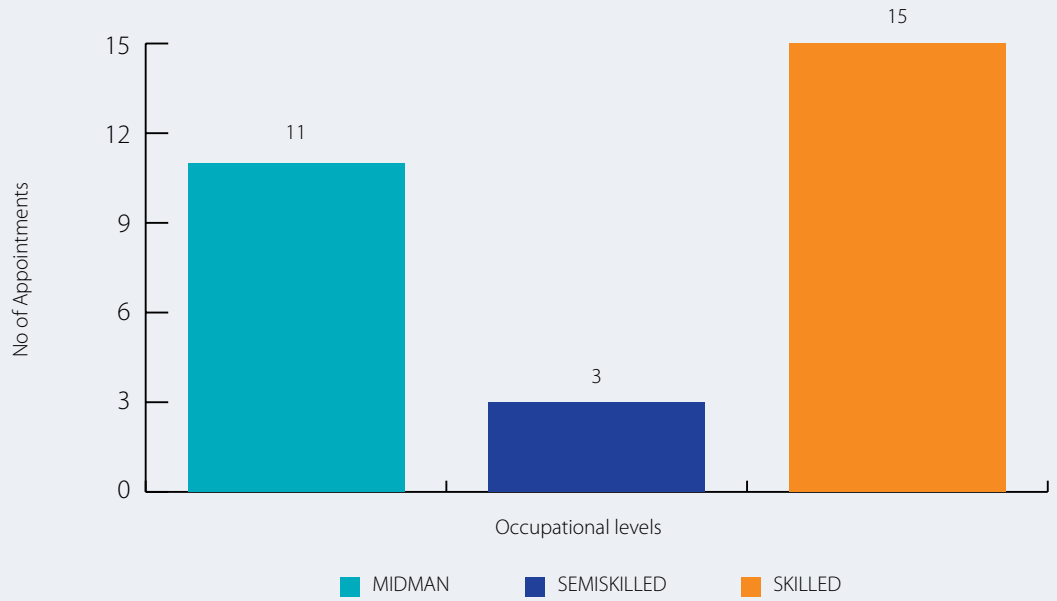
Job category	Total	Black	White	Female
Management	128	89	39	49
Engineers	52	37	15	11
Scientists	103	66	37	34
Professionals	98	62	36	36
Supervisors	89	58	31	13
Operators	192	165	27	11
Artisans	107	69	38	14
Technicians	154	127	27	77
Skilled	400	269	131	205
Semi-skilled	265	239	26	109
Unskilled	168	167	1	106
Contract staff	69	46	23	25
Grand total	**1825**	**1394**	**431**	**690**
		76%	26%	38%

CEO's Information Session with Necsa Group Employees

7.3.1 Appointments

A total of 29 were appointed within the Necsa Group during the year under review. This information is depicted graphically per occupational level in Figure 5 below.

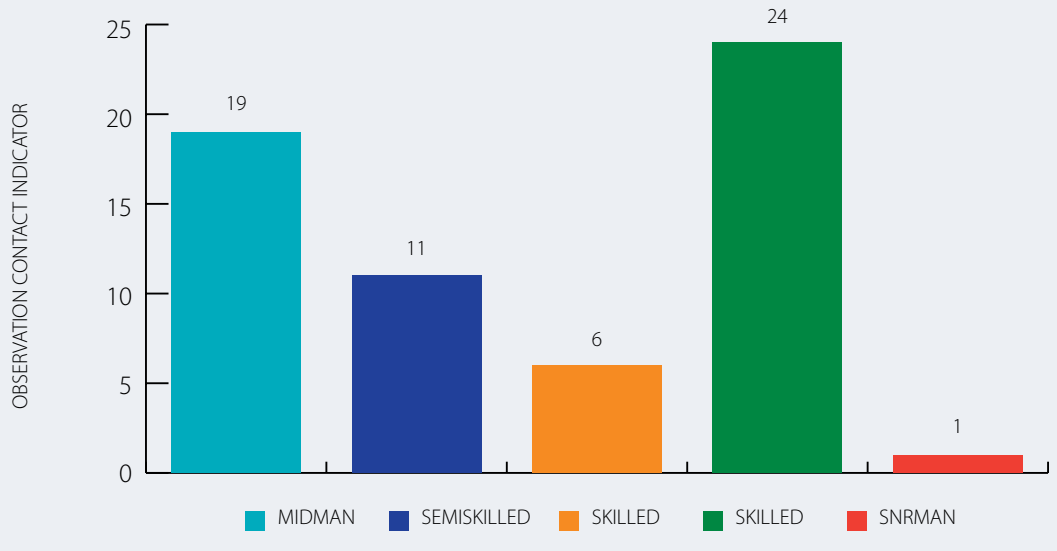
Figure 5: New Appointments



7.3.2 Terminations

The Group lost a total of 61 employees during the year under review. This information is depicted graphically per occupational level in Figure 6 below.

Figure 6: Terminations



7.4 STAFF FINANCIAL STATISTICS

7.4.1 Remuneration

NECSA treats 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, and 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 Bargaining Agreement governing employees. Since the organisation is highly unionised, salary adjustment of employees falling within the bargaining unit are determined through collective bargaining while that of Senior Management and Executives are falling within the purview of the Board Social and Ethics Committee.

Adjustments to the remuneration of Executive Directors and Senior Managers are recommended by the Social and Ethics Committee and are approved by the Board of Directors. For the reporting period, Executive Directors and Senior Managers have not received any adjustment to their remuneration. Director's emolument is disclosed under Note 37. in the Financial Statements.

Table 26: Personnel cost by division

Division	Personnel Expenditure (R'000)	Number of Employees	Average Personnel Cost per Employee (R'000)
AEC Amersham	R15 783	39	R404
Engineering & Technical Services	R80 764	138	R585
Finance & Information Management	R52 233	95	R550
Office of the CEO	R30 258	47	R644
Human Resources & Real Estate Management	R66 030	190	R175
NTP	R211 610	378	R560
Nuclear Compliance Services	R116 233	244	R476
Operations	R184 793	369	R500
Pelchem	R46 417	138	R336
Pelindaba Enterprises	R25 687	69	R372
Research & Technology Development	R89 773	118	R761
TOTAL	**R 919 581**	**1825**	**R503**

Table 27: Personnel cost by salary band

Job category	Personnel expenditure (R'000)	% of personnel expenditure to total personnel cost (R'000)	Number of employees	Average personnel cost per employee (R'000)
Top management	R20 273	2.20%	8	2 534
Senior management	R58 250	6.33%	34	1 713
Professional qualified	R298 761	32.48%	293	1 020
Skilled	R418 317	45.49%	855	489
Semi-skilled	R95 576	10,39%	377	254
Unskilled	R26 416	2,88%	189	140
Contract	R1 721	0.19%	69	23
TOTAL	**R 919 581**	**100,00%**	**1 825**	**504**

7.5 STAFF SOCIAL STATISTICS

The organisation had a total of 321 vacancies as at 31 March 2021. Of these, two were top management, 18 at senior management level, and the remaining vacancies were spread across the remaining occupational levels with a significant portion thereof concentrated at skilled levels. The overall vacancy rate for the group is 15.5%, which, while it is relatively on the higher side, certainly reflects the effect of the austerity measures in the form of a moratorium on the filling of vacancies that was in place throughout the year to contain the wage bill.

Table 28: Employment and vacancies

Job category	2020/2021 Approved posts	2020/2021 Number of Employees	2020/2021 vacancies	% of vacancies
Top management	10	8	2	20%
Senior management	52	34	18	34,62%
Professional qualified	380	293	87	22,9%
Skilled	994	855	139	13,98%
Semi-skilled	452	377	75	16,59%
Unskilled	189	189	0	0,00%
Subtotal	2077	1756	321	15,45%
Contract	-	69	0	
GRAND TOTAL	**2077**	**1825**	**321**	

7.5.1 Employment Changes

As seen from the table below, a total of 61 employees left the organisation through a combination of normal retirement, resignations, leave dismissals and deaths during the financial year. Of this figure, about 36 were from members of designated groups while the rest were mainly Whites.

In contrast to terminations, and also in line with the austerity measures that were put in place, only 29 appointments were for the entire year, some of which were internal promotions were existing staff were appointed to high level positions. Worth noting is that hundred percent (100%) of those were employees from the designated groups in line with the transformation imperatives. The information is presented graphically in table 29 below:

Table 29: Changes in employment over the financial year

Job category	Designated group		Total employees	
	Appointments	Exits	Appointments	Exits
Management	6	4	6	8
Engineers	2	3	2	3
Scientists	1	0	1	5
Other professionals	0	3	0	4
Supervisors	0	0	0	3
Operators	0	5	0	7
Artisans	8	0	8	4
Technicians	7	1	7	1
Skilled	2	11	2	14
Semi-skilled	3	8	3	11
Unskilled	0	1	0	1
Total	**29**	**36**	**29**	**61**

Table 30: Reasons for staff leaving

Reason	Number	% of total no. of staff leaving
Death	6	9,84%
Resignation	21	34,43%
Dismissal	3	4.92%
Retirement	29	47,5%
Ill health	2	3,28%
Disability	0	0,00%
Retrenchment	0	0,00%
Total	**61**	**100%**

7.6 LABOUR RELATIONS

In 2018, a three-year collective agreement was concluded between the Necsa Group and organised labour in relation to the terms and condition of employment. However, the last part of the collective agreement relating to the monetary aspect of the agreement could not be implemented due to the Necsa Group's financial position. This forced the Necsa Group to enter into a further supplementary collective bargaining process to renegotiate the last leg of the collective agreement relating to the pending increases. To that end, the parties renegotiated the last leg of the three-year collective agreement and ended up with the conclusion of an addendum to the 2018/21 collective agreement wherein an amount of 11m, was made available to be distributed equally to employees falling within the Bargaining Unit as a once-off payment in lieu of the salary increase amounting to R50 million which would have been payable in terms of the 2018 collective agreement. This was undoubtedly a huge sacrifice on the part of labour for the sake of social good and a huge victory for the collective wisdom with significant impact to course for containing the wage bill.

The conclusion of the addendum paved the way for the commencement of the 2021/2024 collective bargaining process which took place in February 2021. Due to the co-operative nature of the engagement between the parties, a new collective agreement was reached in March 2021 in spite of the difficult circumstance under which the negotiations were taking place, happening as they were, amidst dire financial position that Necsa Group is faced with. The agreement concluded new terms and conditions of employment for employees falling within the Bargaining Unit made up of employees in the A to D grades, excluding those with titles of senior managers and heads of departments.

Three year multi agreement signing between labour and management

Table 31: Misconduct and disciplinary action

Nature of discipline for 2020/2021

Description	Number/s
Verbal warning	0
Written warning	5
Final written warning	2
Dismissal	3
Pending	6

Table 32: Disciplinary hearings and grievances

Description	2020/2021	2019/20	2018/19	2017/18	2016/17
Disciplinary actions	16	15	16	10	6
Grievances registered	27	19	31	23	24

Table: 33 Labour union membership

Unionised	2020/2021		2019/20		2018/19		2017/18		2016/17	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pelindaba Workers Union	265	22.92	287	23.14	257	20.95	300	23.96	326	26.2
Solidarity	64	5,54	75	6.04	62	5,05	75	5.99	81	6.5
National Education, Health and Allied Workers Union (NEHAWU)	742	64.19	789	63.62	761	62,02	694	55.43	647	51.9
Sub-total	1072	92.65	1151	92.83	1080	88,01	1069	85.38	1054	84.6
Non-unionised	85	7.35	89	7.18%	147	11,98	183	14.61	191	15.52
Total	**1157**	**99.99**	**1240**	**99.98**	**1227**	**100**	**1252**	**99.99**	**1245**	**99.99**

Employment equity

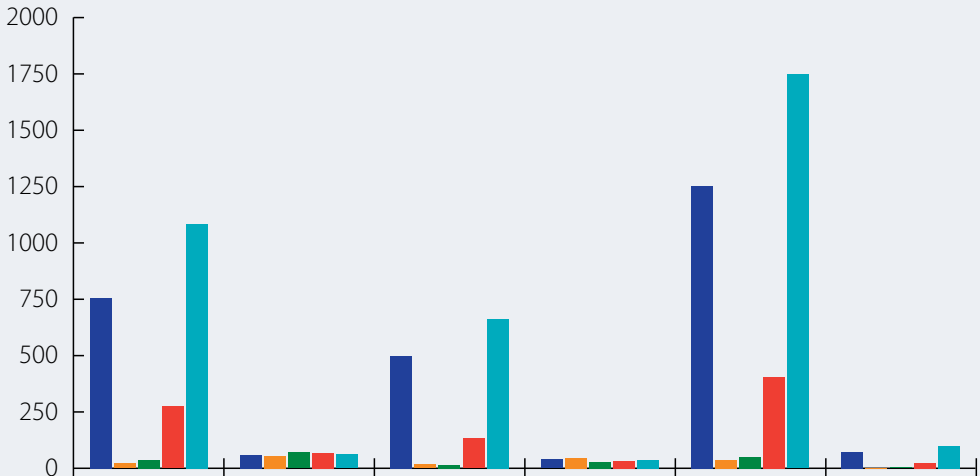
The Necsa Group, as a committed employer, believes that a more diverse workforce results in greater innovation and value creation for the organisation.

The organisation has a five-year Employment Equity (EE) Plan (2015-2020) that incorporates goals and targets as required by the Employment Equity Act (EE Act 55 of 1998). Structures are in place to ensure broad participation across the group to promote equal opportunity and fair treatment for all employees. This is achieved through EE forums at each division and at subsidiary level. Progress is monitored by the Group EE Forum as well as Group Executive. Collectively, these structures have strengthened our focus, commitment and accountability for implementing the EE plan and facilitating positive and inclusive change within the organisation.

The information is presented in accordance with the requirement of section 22 of the EE Report which enjoined every designated employer to publish a summary of their EE Report in the Annual Report.

Figure 7 depicts the composition of Necsa Group's permanent staff per race and gender. Evidenced from the chart is that males constitute 62.1%, while females of all races is 37.9%. In terms of race, the Group is reasonably transformed with Blacks constituting 76.8% while Whites constitutes 23.2% of the staffing complement for the Group.

Figure 7: Staff Composition by Race & Gender



	MALE	%	FEMALE	%	RACE	%
PERMANENT						
AFRICAN	759	60,3	500	39,7	1259	71,7
ASIAN	21	55,3	17	44,7	38	2,2
COLOURED	36	70,6	15	29,4	51	2,9
WHITE	275	67,4	133	32,6	408	23,2
TOTAL	1091	62,1	665	37,9	1756	100,0

Table 34: Analysis People with Disabilities

Years	2015	2020
All employees	2122	1821
Target	**42**	**36**
All PwDs	25	25
% from target	-41%	-39,55
Shortfall	**17**	**11**
% current status	1.18%	1.37%

In our efforts to remove barriers affecting entry of PwDs in the workplace, Necsa is responding to this challenge by embarking on disability sensitisation workshops. Our intentions are to continue rolling out sensitisation workshops to encourage inclusivity and diversity in the workforce.

Table 35: EE statistics by occupational levels

Occupational levels	Male				Female				Foreign nationals		Total
	A	C	I	W	A	C	I	W	Male	Female	
Top management	5	0	0	0	3	0	0	0	0	0	8
Senior management	11	2	3	7	10	0	0	1	0	0	34
Professionally qualified and experienced specialists and mid-management	101	4	13	76	47	2	7	33	9	1	293
Skilled technical and academically qualified workers, junior management, supervisors, foremen, and superintendents	320	19	4	172	238	5	9	85	3	0	855

Occupational levels	Male				Female				Foreign nationals		Total
	A	C	I	W	A	C	I	W	Male	Female	
Semi-skilled and discretionary decision making	238	11	1	15	92	8	1	11	0	0	377
Unskilled and defined decision making	79	0	0	1	107	0	0	2	0	0	189
TOTAL PERMANENT	**754**	**36**	**21**	**271**	**497**	**15**	**17**	**132**	**12**	**1**	**1756**
Temporary employees	27	2	2	13	17	1	0	6	1	0	69
GRAND TOTAL	**781**	**38**	**23**	**284**	**514**	**16**	**17**	**138**	**13**	**1**	**1825**

Table 36: Employees with disabilities per occupational levels

Occupational levels	Male				Female				Foreign nationals		Total
	A	C	I	W	A	C	I	W	Male	Female	
Top management	0	0	0	0	0	0	0	0	0	0	0
Senior management	0	0	0	0	0	0	0	0	0	0	0
Professionally qualified and experienced specialists and mid-management	1	0	0	4	0	0		1	0	0	6
Skilled technical and academically qualified workers, junior management, supervisors, foremen, and superintendents	1	1	0	5	3	0	0	2	0	0	12
Semi-skilled and discretionary decision making	4	0	0	2	0	0	0	2	0	0	8
Unskilled and defined decision making	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERMANENT	**6**	**1**	**0**	**11**	**3**	**0**	**0**	**5**	**0**	**0**	**26**
Temporary employees	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL	**6**	**1**	**0**	**11**	**3**	**0**	**0**	**5**	**0**	**0**	**26**

7.7 STAFF DEVELOPMENT

7.7.1 Technical Skills Training

The Necsa Skills Development Centre continues to fulfil 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 **139**.

The National Skills Fund (NSF) Artisan Development Programme Project 2 was implemented successfully as it had a throughput of 98% as 56 learners were recruited and 54 learners completed trade test, qualified and certificated.

The Gauteng Technical Manufacturing Initiative Artisan Development Programme is the process as 69 learners are doing on-the-job training.

7.7.2 Trade Test Centre (TTC)

The TTC continues to grow and conducted 210 trade tests. Trade test preparation was conducted for 295 candidates; gap training was 75 and pre-assessment /ARPL was **95**.

7.7.3 Human Capital Development

Chemical Industries Education and Training Authority (CHIETA)-funded Work Integrated Learning (WIL)

The WIL Programme that is funded by Chieta has been finalised and the students are on-site at different divisions.

Table 37 below provides details

Discipline	Black		Coloured		Total
	M	F	M	F	
National Diploma (ND) in Industrial Physics	**3**	**3**	0	0	**6**
ND in Management	**1**	**7**	0	0	**8**
ND in Information Technology	**0**	**1**	0	0	**1**
ND in HR	**1**	**3**	0	0	**4**
ND in Logistics Management	**0**	**1**	0	0	**1**
ND in Internal Audit	**3**	**3**	0	0	**6**
ND in Analytical Chemistry	**1**	**2**	0	0	**3**
ND in Industrial Engineering	**2**	**1**	0	0	**3**
Finance	**0**	**4**	0	0	**4**
Journalism	**0**	**1**	0	0	**1**
Occupational Hygiene	**0**	**1**	0	0	**1**
Social Work	**0**	**1**	0	0	**1**
Law	**0**	**1**	0	0	**1**
Safety Management	**2**	**3**	0	0	**5**
Cafeteria Assistant	**1**	**1**	0	0	**2**
Total	**14**	**33**	**0**	**0**	**47**

Two programmes are continuing, i.e. Adult Education and Training (AET) and Generic Management Learnership.

ADULT EDUCATION AND TRAINING (AET)

The AET training started in November 2019, level 1, 2 and 3. Training will be completed in May 2021.

The breakdown is shown in the table 38 below:

AET training, Quarter – April 2020 to March 2021								Amount
Discipline	Gender		Race				Total	
	M	F	B	C	I	W		
AET training	9	15	23	0	0	1	**24**	**R58 698.47**
Total	**9**	**15**	**23**	**0**	**0**	**1**	**24**	**R58 698.47**

Generic Management Learnership NQF Level 5

Thirty Necsa employees are participating in the Generic Management Learnership NQF Level 5. Training was completed in December 2020. The breakdown of employees who are attending the Generic Management Learnership is shown in the table 39 below:

Generic Management Learnership – April 2020 to March 2021								Total amount
Discipline	Gender		Race				Total	
	M	F	B	C	I	W		
Generic Management Learnership	19	11	25	0	0	5	**30**	**R191 000.00**
Total	**19**	**11**	**25**	**0**	**0**	**5**	**30**	**R191 000.00**

Table 40: Radiation Protection Training Centre

Training area	Gender		Race				Total
	M	F	B	C	I	W	
RPO1	8	4	4	0	0	8	**12**
Radiation protection in industry	4	1	0	0	0	5	**5**
Radiation protection in mining and pharmacy	7	1	1	6	0	0	**8**
MSc	0	1	1	0	0	0	**1**
PhD	2	1	3	0	0	0	**3**
Total	**21**	**8**	**9**	**6**	**0**	**13**	**29**

STATUTORY TRAINING

Table 41: SHEQ training statistics - 1 April 2020 to 31 March 2021

Course	Black		Coloured		Indian		White	
	Male	Female	Male	Female	Male	Female	Male	Female
Chemical Worker Full Course	36	12	2	0	1	0	7	3
Chemical Worker Exam	131	35	8	1	1	1	49	23
Confined Spaces Full Course	0	0	0	0	0	0	0	0
Confined Spaces Exam	14	0	0	0	0	0	3	0
Decontamination Worker Full Course	6	3	0	0	0	0	1	0
Decontamination Worker Exam	5	0	0	0	0	0	1	1
Noise Worker Full Course	29	7	1	0	1	0	1	2
Noise Worker Exam	200	48	19	4	2	0	97	16
Necsa Orientation	65	17	3	0	4	0	29	7
Contractor Orientation	64	14	0	0	0	0	8	3
Radiation Worker Full Course	31	9	1	0	1	0	8	3
Radiation Worker Exam	115	39	15	2	4	3	63	23
Work Permit Full Course	12	6	0	0	0	0	4	2
Work Permit Exam	24	1	0	0	0	0	8	1
TOTAL	**732**	**191**	**44**	**7**	**14**	**4**	**279**	**84**

Our income was almost 59% less than the previous financial year although more than 100 additional persons were trained. This was mainly due to much less full courses presented due to the Covid-19 lock down restrictions and the corresponding lesser exam fees.

7.8 REAL ESTATE MANAGEMENT

Real Estate Asset Management (REAM) is a Property Management, Transport, Courier and Postal Services Department of the Necsa Group responsible for efficient and effective management of the property (immovable property) and fleet (movable property) administration portfolio.

OVERVIEW

The portfolio includes immovable assets (office buildings, laboratories, workshop/warehouses, residential and land) and movable assets (sedans, passenger vehicles, trucks, and trailers), located all over South Africa, including assets at the Pelindaba site, Vaalputs site and Springbok. The REAM mandate focuses on improving the condition of properties, in order to provide safe and quality supporting facilities to the Necsa Group while growing the portfolio value through commercialisation.

Despite the fact that the majority of Necsa Group's infrastructure was built during the 1960s and the 1970s, the infrastructure will continue to be central to the organisations' existence, and therefore will always require managing, often with less resources.

Well-managed infrastructure can realise huge value, but using outdated approaches can result in underperformance and losses.

At the core of REAM Strategy is ensuring that the condition of the infrastructure is improved and continuously maintained to support the Necsa Group's business operations first while generating income through the exploitation of the assets and increasing income from immovable assets. This strategy supports and forms part of the Necsa Group's operational growth strategy.

Initiatives

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

Pelindaba Masterplan

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.
- Improve efficiencies by sweating the property assets and generating additional income, in terms of best practise in asset management.

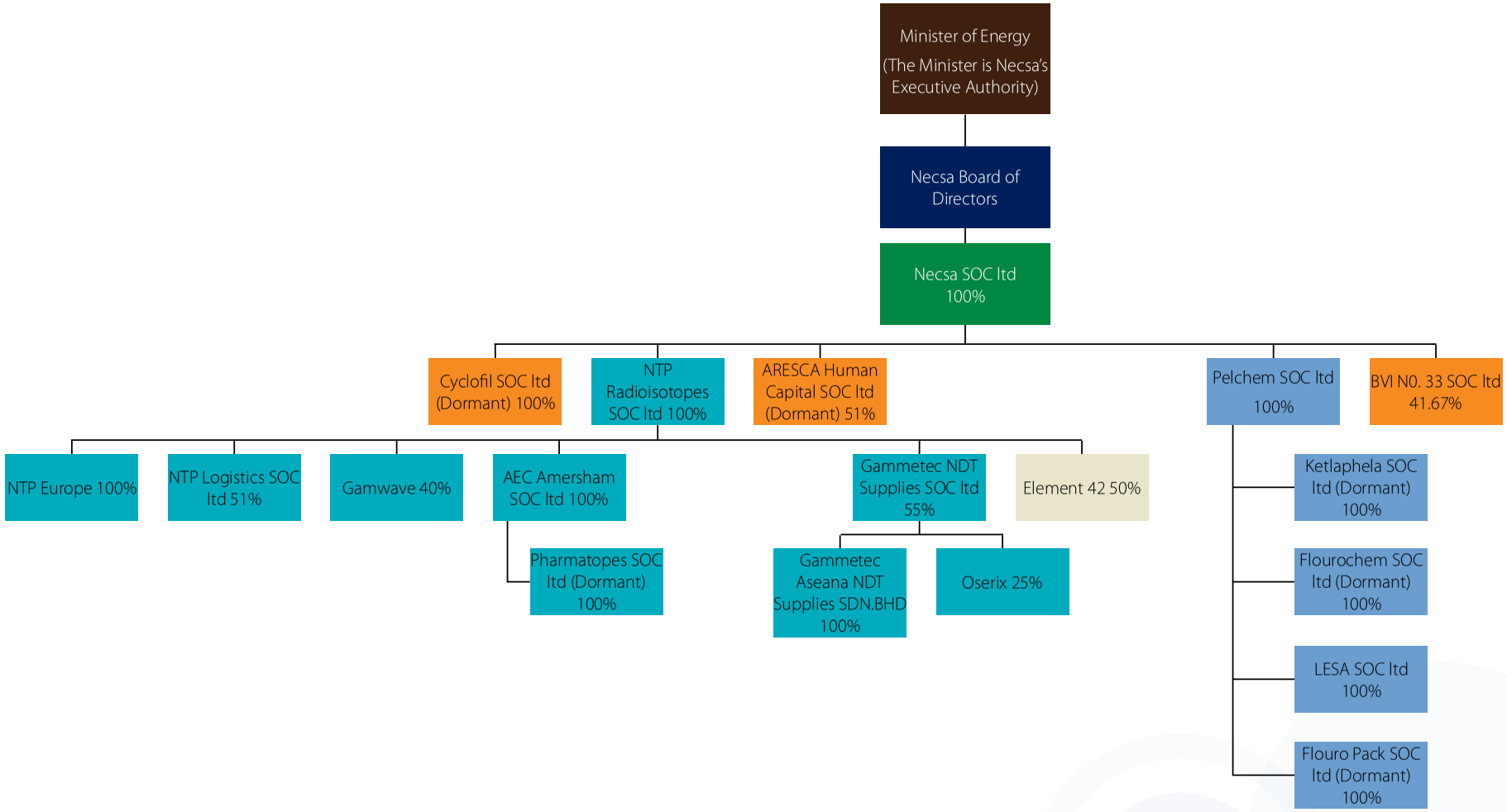
• Improve efficiencies by sweating the property assets and generating additional income, in terms of best practise in asset management.

One of the key emerging strategies is the development of the concept masterplan 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 total Pelindaba property is 2,361ha. Necsa's fenced area is 663.7ha (29%) of the total Necsa-owned property and the remaining 783.4ha (3%) is made up of roads (N4 and R104), and undevelopable land [wetland and steep slopes. The conceptual Masterplan area is 1,624ha (68%), with the remaining 783.4ha (3%) being made up of roads (N4 and R104), and undevelopable land [wetland and steep slopes]. Necsa has kept 68% of its land on the Pelindaba site vacant for several decades, in order to secure the formal Emergency Planning Zone, or buffer area, (an area within a radius of 5 km from the SAFARI -Reactor, with a capacity of 20MW). Some asset improvement and commercialisation initiation projects have been rolled over for execution in the 2020/21 financial year.

The Pelindba site

8. GOVERNANCE STRUCTURES



8.1 BOARD OF DIRECTORS

The Board of Directors is the Accounting Authority in terms of the PFMA (1999) and is appointed for a renewable period of three years by the Minister of Mineral Resources and Energy. In terms of Section 16, Necsa is governed and controlled, in accordance with the Nuclear Energy Act (1999), by a Board of Directors to ensure that the objects of the Act are carried out, and to exercise general control over the performance of Necsa's functions. The Board of Directors embrace the principles of good corporate governance and considers these as the underlying philosophy in creating organisational excellence at all levels within Necsa.

The Board sets the precedent in driving the ethics of good governance and the Directors, collectively and individually, acknowledge their responsibilities and duties in terms of the Board Charter and other governance, regulatory and legislative requirements.

The Board is accountable for the overall formulation, monitoring and review of Necsa's corporate strategy and related affairs, while delegating to management the responsibility for business performance and achievement of the organisation's objectives.

The Board composition reflects the wide range of skills and knowledge necessary to meet Necsa's strategic objectives.

8.1.1 Details of Board Members

The Necsa Board composition information provided is for the reporting period 1 April 2020 to 31 March 2021. For the period under review, the Board composition is based on a three-year term, effective from 17 January 2020 to 23 January 2023.

The Necsa Board comprised of eight non-executive directors who were independently appointed by the Minister of Mineral Resources and Energy, two representatives from the Department and an Executive Director (GCEO).

New dawn as the sun rises over Necsa site.

Mr. D.R. Nicholls
Chairperson of the Board

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

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

Mr. M.J. Maboa
Non-Executive Director
Chairperson of Investment and Finance Committee

Mr. L.J. Shayi
Non-Executive Director
Chairperson of Nuclear Oversight and Regulatory Compliance Committee

Ms S.K.N. Masango
Non-Executive Director
Chairperson of Technology (Research & Development) Committee

Ms L. Noge-Tungamirai
Non-Executive Director

Ms A. Chowan
Non-Executive Director
Chairperson of Audit and Risk Committee

Ms P.E. Monale
DMRE Representative

Ms B. Makgopa
DMRE Representative (alternative)

Mr. L. Tyabashe
Group CEO

DETAILS OF GROUP BOARD MEMBERS

Table 42: Directors appointment effective 17 January 2020 to date

Surname & initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, knowledge and experience	Terms of Board appointment		Active membership on the other organisations/companies/entities Boards
				qualification	Date of first appointment	Expiration/ resignation date	
Mr. Nicholls DR	Male	White	67	• BSc (Hons) in Mechanical Engineering (2-1), Royal Naval Engineering College, Manadon • Post Graduate Diploma in Nuclear Reactor Technology, Royal Naval College, Greenwich	17 January 2020	16 January 2023	• Carlswald Estate Home Owners Association
Dr. Magau NT	Female	Black	69	• D. Ed, Harvard University • M. Ed, Rand Afrikaans University • B. Ed, University of South Africa • BA, University of the North	17 January 2020	16 January 2023	• Trustee of Bertha Gxowa Foundation • Dept of Water Izakhiwo Infundo Trust
Dr. Davids GJ	Male	Coloured	61	• B.A Public Administration, University of Western Cape, • B.A. (Hon) Development Administration • Master Degrees in Public Administration, Stellenbosch University • Phd (University of Western Cape) • Program for Management Development (PMD)(Harvard) • Certificate International Finance and Economics (International Institute of For Public Administration -IIAP-France) • Governing for Non-Profit Organisations (Certificate- Harvard)	17 January 2020	16 January 2023	• UWC, Representative of Various University Committees responsible for Planning, policy matters, academic leadership etc. • UWC Faculty Chairperson of Assessment Committee • UWC, Member of Senate Assessment Committee

Surname & initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, knowledge and experience	Terms of Board appointment		Active membership on the other organisations/companies/entities Boards
				qualification	Date of first appointment	Expiration/ resignation date	
Mr. Maboa MJ	Male	Black	41	• B.Com (Fin Acc), University: University of Cape Town • Postgraduate Diploma in Accounting • Advanced Diploma in Auditing • Professional Qualifying Exam, Part 1 & 2	17 January 2020	16 January 2023	• Movundlela Consulting Pty Ltd- M Consulting Mashukudu James Maboa and Co Incorporated-MJM • Nehawu Investment Holdings (Pty) Ltd • Malchiel Investments (Pty) Ltd • Eyesizwe Mining Development Trust • Eyesizwe Mining (Pty) Ltd • UNISA Council • UNISA Enterprise (Pty) Ltd • Kings of Valhalla(Pty)Ltd • Huruma Incorporated • Morama Investments • Umthathi Coal • Rasepuetse Investments • Manthogoane Investments • Kgola Investments • NyamNyam Gaming • Alexandra Breweries • Dikakapa Investments • Nehawu Lottery Investments • Bahlahli Accounting Services & Consulting • Global Transaction &Capital Services

Surname & initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, knowledge and experience	Terms of Board appointment		Active membership on the other organisations/companies/entities Boards
				qualification	Date of first appointment	Expiration/ resignation date	
Mr. Shayi LJ	Male	Black	62	• Master of Business Leadership, University of South Africa (UNISA) • Master of Science in Chemistry, University of Pretoria • BSc (Hons): Majors in Physical and Inorganic Chemistry, University of Natal • BSc: Majors in Chemistry and Physics, University of the North	17 January 2020	16 January 2023	n/a
Ms. Masango SKN	Female	Black	34	• Masters in Nuclear Physics, University of The Western Cape • Hons in Nuclear Physics, University of Zululand • BSc Physics & Electronics (major in electronics), University of Zululand • Project Management Diploma, Varsity College • Certificate in Detector and Instrumentation Technology, Fermilab, USA	17 January 2020	16 January 2023	• Senamile Masango Foundation • Dumango Coordination (Pty) Ltd • Member of the UWC Council

Surname & initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, knowledge and experience	Terms of Board appointment		Active membership on the other organisations/companies/entities Boards
				qualification	Date of first appointment	Expiration/ resignation date	
Ms. Noge-Tungamirai L	Female	Black	39	• Master of Business Administration (MBA, Wits Business School) • Master Network Engineering Diploma, Torque-IT: • IT Programming Diploma, CTU Training Solutions	17 January 2020	16 January 2023	• Member of the Institute of Directors (IoDSA) • Member of Institute of People Management • Board Member, Community Schemes Ombud Services (CSOS) • Board Member, National Library of South Africa (NLSA) • Board Member, Mangosuthu University of Technology (MUT) • Board Member, Boxing South Africa (BSA) • Board Member, Development Bank of Southern Africa (DBSA)
Ms. Chowan A	Female	Indian	47	• CA(SA) Registered Auditor • University of Durban Westville: Bachelor of Accountancy • University of Durban: Post Graduate Diploma in Accounting • University of South Africa (UNISA): LLB degree	17 January 2020	16 January 2023	• Member on the SAICA disciplinary Committee • Member of the Tax Court • Board Member, SACORP (Lister company) • Board Member, Legal Aid South Africa • Board Member, Action Aid South Africa

Surname & initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, knowledge and experience	Terms of Board appointment		Active membership on the other organisations/companies/entities Boards
				qualification	Date of first appointment	Expiration/ resignation date	
Ms. Monale PE DMRE Representative	Female	Black	57	• MSc in Applied Radiation – • University of North-West • BSc Ed – University of North-West • Training Course on Physical • Protection of Nuclear Material and • facilities – (IAEA) • Training Course on State System • for Accounting for and Control of • Nuclear Material – IAEA • Safeguards Training – IAEA	1 February 2020	January 2023	n/a
Ms. Makgopa B Alt. to Ms. Monale	Female	Black	45	• MSc Nuclear Engineering – UNW • B Sc Honours Environmental Management – UNISA • BSc Honours in Physics – RAU • BSc Physical Sciences – RAU • Programme in Project Management – UP • Executive Leadership Development Programme – NSG/UNW	1 February 2020	31 January 2023	• Director: Tsebo Science and Technology Centre

Surname & initials	Gender	Race (African, Asian, Coloured and White)	Age	Skills, knowledge and experience	Terms of Board appointment		Active membership on the other organisations/companies/entities Boards
				qualification	Date of first appointment	Expiration/ resignation date	
Mr. Loyiso Tyabashe	Male	Black	47	• Master of Science in Mechanical Engineering (MSc. Mech. Eng.) - UCT • Bachelor of Science in Mechanical Engineering (BSc. Mech. Eng.) – UCT • World Nuclear University Summer Institute, WNU (Oxford, UK) • Executive Leadership Program (ELP), University of Cape Town (UCT) Graduate School of Business (GSB) • Senior Nuclear Plant Manager, INPO (Atlanta, Georgia – USA) • Safety Engineer, EDF, (Bordeaux and Lyon – France) • Nuclear Engineers' Course, Eskom Pr. Eng (ECSA)	01 January 2021	December 2023	n/a

8.1.2 Board Charter

The Nuclear Energy Act (1999) and Board Protocol serve as the Necsa Board Charter. They regulate the Board in accordance with the principles of good corporate governance and set out the specific duties and responsibilities to be discharged by the Board as a unitary working group. They ensures that all Board members, acting on behalf of the Authority, are aware of the legislation and regulations affecting their conduct and to ensure that the principles of good corporate governance are applied in all their dealings with respect to and on behalf of Necsa.

8.1.3 Meetings of the Board

The Nuclear Energy Act (1999) 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.

Table 43: Meetings of the Board for the financial reporting

Member details	Meeting dates For the period April 2020 – March 2021																		
	3 Apr.	24 Apr.	28 May	9 Jun.	19 Jun.	29 Jun.	31 Jul.	24 Aug.	25 Aug.	6 Oct.	16 Oct.	11 Nov.	27 Nov.	8 Dec.	16 Dec.	12 Jan	15 Jan.	26 Feb.	31 Mar
Mr. Nicholls DR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Dr. Magau NT	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Dr. Davids GJ	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mr. Maboa MJ	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mr. Shayi LJ	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Ms. Masango SKN	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Ms. Noge-Tungamirai L	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Ms. Chowan A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Ms. Monale PE	P	P	P	P	P	P	A	P	P	A	A		P	P	A	P	P	P	P
Ms. Makgopa B	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P
Mr. Myoli AB	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	-	-	-	-
Mr. L Tyabashe	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	P	P	P

P Member present at the meeting

A Member not present, but tendered an apology

T Member participated via Telecon

N Member not appointed at this stage

8.1.4 Committees of the board

The Board has continued to improve its effectiveness and quality of governance. This is evidenced by revision of the number of board subcommittees from two, statutory subcommittees, to four, and on the development of the corporation's strategy and plan to ensure its alignment with the business and mandate of Necsa.

The Board was advised and assisted by four Board Committees, i.e., the Audit and Risk, Social and Ethics, Research and Development, and Investment and Finance. The Board Committees met at least once per quarter and all the Committees have adopted formal terms of reference (TOR) and provide the required feedback to the Board through Committee reports. Board Committees and TOR are reviewed annually to ensure continuing relevance.

In terms of Section 19 of the Nuclear Energy Act (1999), the Board is advised and assisted by advisory committees, whose mandate is to assist the Board in discharging its responsibilities. These committees play an important role in enhancing high standards of governance and improving effectiveness within the Necsa Group. External advisors are invited to attend Board and/or committee meetings on an ad hoc basis, as or when the need arises.

AUDIT AND RISK COMMITTEE (ARC)

The ARC plays a key role in assisting the Board to fulfil its oversight responsibilities in areas such as an entity's financial reporting, internal control systems, risk management systems and the internal and external audit functions.

Members of the Committee are:

- Ms. A Chowan (Chairperson)
- Ms. L Noge-Tungamirai
- Ms. S K N Masango
- Mr. LJ Shayi
- Dr. DJ Davids

Table 44: Meetings held for the reporting report were as follows:

Members names	Meeting dates For the period 25 June 2020 – March 2021							
	25 Jun.	26 Jun.	3 Jul.	14 Jul.	30 Jul.	31 Jul.	23 Feb.	19 Mar.
Ms. A Chowan (Chairperson)	P	P	P	P	P	P	P	P
Ms. L Noge-Tungamirai	P	P	P	P	P	P	P	P
Ms. S K N Masango	p	P	P	P	P	P	P	P
Mr. LJ Shayi	P	P	P	P	P	P	P	P
Dr. DJ Davids	N	N	N	N	N	N	P	P

SOCIAL AND ETHICS COMMITTEE (SEC)

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 role of the SEC is to assist the Board with the oversight of social and ethical matters relating to the Company.

Members of the Committee are:

- Dr. N T Magau (Chairperson)
- Dr. G J Davids
- Mr. L J Shayi
- Ms. L Noge-Tungamirai
- Ms. A Chowan
- Ms. S K N Masango

Table 45: Meetings of the Committee for financial reporting:

Members names	Meeting dates For the period 25 June 2020 – March 2021					
	30 Mar.	7 Jul.	21 Jul.	17 Nov.	18 Feb.	29 Mar.
Dr. N T Magau (Chairperson)	P	P	P	P	P	P
Dr. G J Davids	P	P	P	P	P	P
Mr. L J Shayi	p	P	P	P	P	P
Ms. L Noge-Tungamirai	P	P	P	P	P	P
Ms. A Chowan	N	N	N	N	P	P
Ms. S K N Masango	N	N	N	N	P	P

INVESTMENT AND FINANCE COMMITTEE

The purpose of the Investment and Finance Committee is to assist the Board in fulfilling its obligations by receiving reports, deliberating and/or making recommendations to the Board on matters investment policies, reviewing the viability of business opportunities and/or cases, reviewing the Necsa Group's financial performance, procedures to monitor the application of and compliance with the investment policies by Officers, Employees and Necsa's Investment Board's agents, approval of all other investment transactions, the effectiveness of the investment policies and the achievement of the objects of the Necsa Board, considering and recommendation for approval by the Necsa Board the Necsa Group's Corporate Plan, and such other matters as may be delegated to the Committee by the Board.

Members appointed are:

- Mr. M J Maboa (Chairperson)
- Dr. N T Magau
- Ms. A Chowan
- Ms. S K N Masango

Table 46: Meeting of the Committee for the financial reporting:

Members names	Meeting dates For the period 25 June 2020 – March 2021			
	18 Jun.	23 Jul.	17 Nov.	17 Feb.
Mr. M J Maboa (Chairperson)	P	P	P	P
Dr. N T Magau	P	P	P	P
Ms. A Chowan	p	P	P	P
Ms. S K N Masango	P	P	P	P

TECHNOLOGY (RESEARCH & DEVELOPMENT) COMMITTEE

The objective of the Committee is to provide assurance to the shareholders and/or stakeholders of Necsa that Technology (including Research & Development) matters of the Company are strategic, innovative, and supported at the highest level.

Members appointed are:

- Ms. S K N Masango (Chairperson)
- Mr. L J Shayi
- Mr. D R Nicholls
- Dr. G J Davids
- Ms. L Noge-Tungamirai

Table 47: Meeting of the Committee for the financial reporting:

Members names	Meeting dates For the period 25 June 2020 – March 2021						
	14 Apr.	28 Apr.	4 Jun.	21 Jul.	19 Nov.	23 Nov.	20 Feb.
Ms. SKN Masango (Chairperson)	P	P	P	P	P	P	P
Mr. L J Shayi	P	P	P	P	P	P	P
Mr. D R Nicholls	P	P	P	A	P	P	P
Dr. G J Davids	P	P	P	P	P	P	P
Ms. L Noge-Tungamirai	P	P	P	P	P	P	P

BUSINESS DEVELOPMENT COMMITTEE

Members appointed are:

- Dr. G J Davids (Chairperson)
- Ms. S K N Masango
- Mr. D R Nicholls
- Mr. M J Maboa
- Ms. L Noge-Tungamirai

Table 48: Meeting of the Committee for the financial reporting:

Members names	Meeting dates For the period 25 June 2020 – March 2021	
	17 Nov.	17 Feb.
Dr. G J Davids (Chairperson)	P	P
Ms. S K N Masango	P	P
Mr. D R Nicholls	P	P
Mr. M J Maboa	P	P
Ms. L Noge-Tungamirai	N	P

NUCLEAR OVERSIGHT AND REGULATORY COMPLIANCE COMMITTEE

Members appointed are:

- Mr. L J Shayi (Chairperson)
- Mr. S K N Masango
- Mr. D R Nicholls
- Ms. L Noge-Tungamirai
- Ms. B M Makgopa

Table 49: Meeting of the Committee for the financial reporting:

Members names	Meeting dates For the period 25 June 2020 – March 2021	
	20 Nov.	18 Feb.
Mr. L J Shayi (Chairperson)	P	P
Mr. S K N Masango	P	P
Mr. D R Nicholls	P	P
Ms. L Noge-Tungamirai	N	P
Ms. P E Monale	N	P

BOARD STRUCTURAL OPTIMISATION COMMITTEE

This in an interim Board Committee appointed to oversee the possible restructuring and repurposing of the Necsa Group in line with the Government's clarion call to rationalise SOEs.

Members appointed are:

- Mr. M J Maboa (Chairperson)
- Dr. N T Magau
- Ms. P E Monale
- Mr. D R Nicholls

Table 50:

Members names	Meeting dates For the period 25 June 2020 – March 2021			
	8 May.	17 Jul.	17 Sep.	20 Feb.
Mr. M J Maboa (Chairperson)	P	P	P	P
Dr. N T Magau	P	P	P	P
Ms. P E Monale	p	P	A	P
Mr. D R Nicholls	P	P	P	P

Mr. Loyiso Tyabashe
Necsa Group Chief Executive Office

Mr. Zahir Ismail
Acting Head of Internal Audit

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

Mr. Umesha Natha
General Manager - Strategy and Performance

Mr. Ayanda Myoli
Divisional Executive: Engineering and Technical Services

Mr. JF du Bruyn
Acting Chief Technology Officer

Ms. Mosa Rasweswe
Group Executive Nuclear Compliance and Services

Mr. Fortune Mkhabela
Chief Risk Officer

Mr. Mongezi Janjtie
Acting Chief Legal Advisor

Dr. Jan Rijn Zeevaart
Acting Divisional Executive: Research & Development

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

Ms. Nikelwa Tengimfene
General Manager Corporate Communication and Stakeholder Relations

Ms Hlengiwe Khumalo
Group Chief Financial Officer

Ms Precious Hawadi
NTP Chief Financial Officer

Mr. Thabo Tselane
NTP Interim Group MD

Mr. Ivan Radebe
Pelchem MD

Mr. Petrus J Schutte
Pelchem Chief Financial Officer

Ms. Ntsebatse Matube
Acting GE: HR & Ream

COMPOSITION OF MEMBERS OF EXECUTIVE MANAGEMENT

In terms of Sections 22 and 23 of the Nuclear Energy Act (1999), the GCEO has the power and authority, among other things, to implement approved business plans, annual budgets, all other issues and matters relating to the achievement of Necsa's goals including prepare, review and recommend to the Board the annual budgets and any amendments thereto.

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

Following the appointment of Mr. Loyiso Tyabashe as GCEO of the Necsa Group with effect from 1 January 2021, Mr. Ayanda Myoli having acted in a position of the GCEO since July 2019, assumed the position of Divisional Executive of Engineering and following the reassignment of the incumbent Mr. Natha to the structural optimisation and repurposing Task Team was on an ad hoc basis appointed the role of Strategy and Performance.

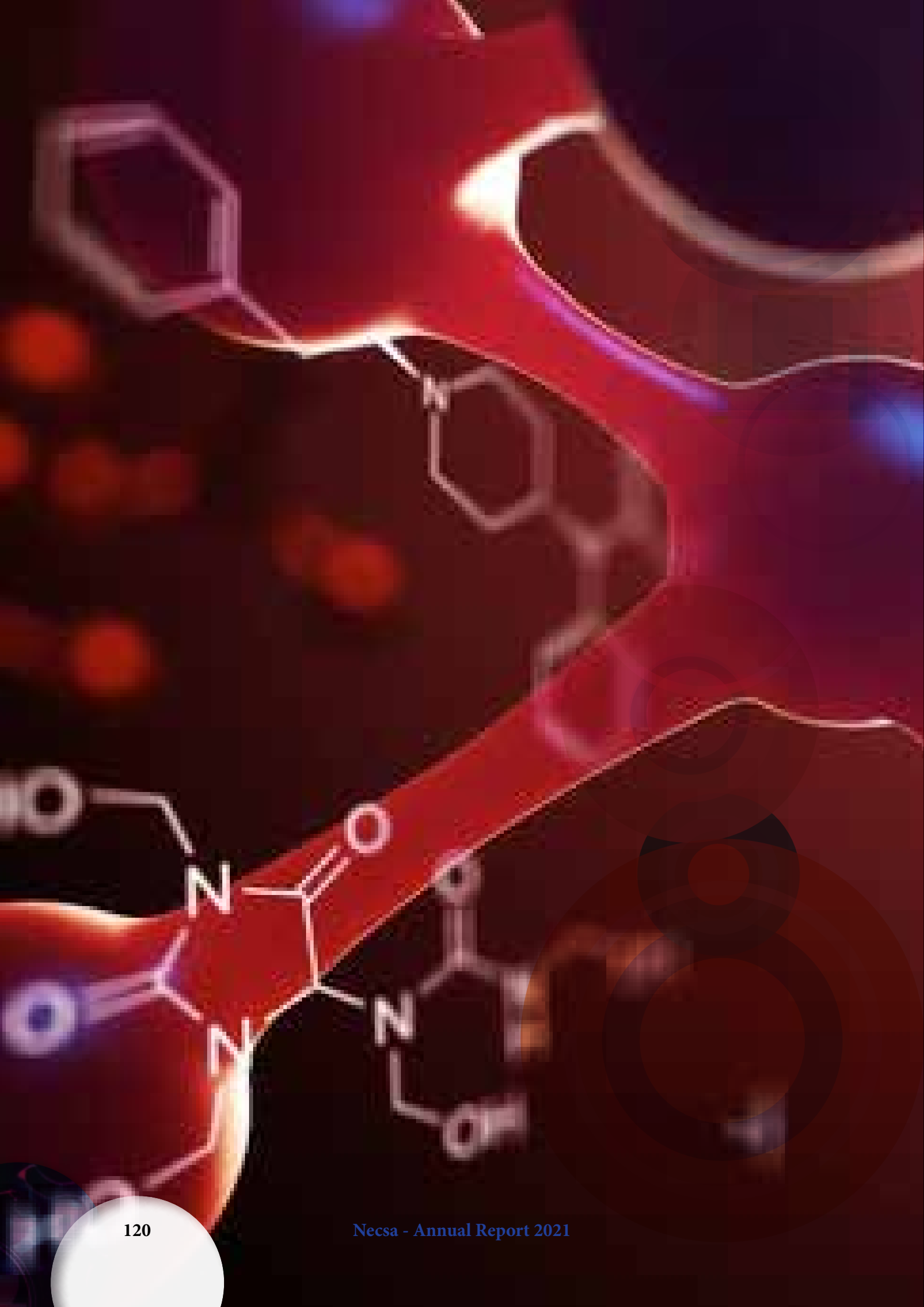
In line with the strategic focus on a repurposed organisation for future sustainability and a financially stable organisation, a Task Team was established within the organisation to accelerating the process. The Task Team consists of Ms. Tina Eboka, NTP Group MD whose term of office comes to an end on 31 May 2021, Mr. Monde Mondi GE: HR & Ream, Mr. Umesh Natha: Head of Strategy and Performance, Mr. Gerhard Smit: NTP Group Executive: Strategic Business Support and Ms. Lynette de Lange: Pelchem Head of HR. The Task Team members were seconded to work in the task team on a full-time basis for the next three months. Ms. Nikelwa Tengimfene was opted for undertaking communications and stakeholder related responsibilities. As a result, Ms. Ntebatse Matube was acting in the role of GE: HR & Ream, Mr. Thabo Tselane Interim MD of NTP Group while Mr. Koos du Bruyn is acting in the position of Chief Technology Officer.

Table 51: The members of the Group Executive Management Committee (EXCO) are:

Name	Capacity	Appointed date	Qualifications
Mr. Loyiso Tyabashe	Necsa Group CEO	1 January 2021	• MSc Mech.Eng • BSc. Mech. Eng • Pr. Eng (ECSA)
Mr. Thabo Tselane	NTP Acting Group MD	1 February 2021	• M.Sc (Applied Nuclear Physics • B.Sc (Honours Nuclear Physics) • B.Sc (Chemistry and Physics) • Project Management qualification • Programme Qualification • Global Executive Development Programme
Mr. Ivan Radebe	Pelchem MD	Nov 2016- current	• National Diploma, Electronics Engineering • B. Eng Hons • Masters in Strategy • Project Management
Ms. Hlengiwe Khumalo	Necsa Group Chief Financial Officer	01 September 2017 – 31 May 2021	• Master of Business Leadership (MBL) • Post-Graduate Diploma, Business Management (PGDBM) • Bcom (Majors: Business Management and Internal Auditing • National Diploma: Internal Auditing

Name	Capacity	Appointed date	Qualifications
Ms. Precious Hawadi	NTP Chief Financial Officer	01 June 2021 - current	• PED - Program for Executive Development • Transition to Business Leadership – TBL • Foundations for Business Leadership – FBL • Chartered Accountant CA(SA) • Bcom Honours • Bachelor of Commerce - BCom
Mr. Petrus J Schutte	Pelchem Chief Financial Officer	2019-current	• CGMA; Chartered Institute of Management Accountants • B. Com [Honors] (Financial Management) • B.Com (Accountancy)
Mr. Ayanda Myoli	Divisional Executive of Engineering and Technical Services	1 February 2021	• B. Sc (Eng)(Mech) • Masters of Business Leadership (MBL) • Snr Management Programme • Diploma Packaging Management
Mr. JF du Bruyn	Acting Chief Technology Officer	1 February 2021	• NHDT Mech. Eng • HNDT QA Mang.
Mr. Ruby Ramatsui	Group Executive: Pelindaba Engineering, Construction and Consulting	01 September 2017 – current	• Project Management • Master of Business Administration
Mr. Umesh Natha	General Manager: Strategy and Performance	01 September 2017 – current	• B. Eng (Chemical Engineering) • Masters of Business Administration
Mr. Mongezi Jantjie	Acting Chief Legal Advisor (ex-officio member)	01 August 2019 – date	• BA (Majors: Psychology, Political Science) • Post Graduate Diploma in Higher Education (HDE) • LLB • LLM • Certificate in Industrial Relations UNISA
Ms. Mosa Rasweswe	GE: Nuclear Compliance and Services	01 January 2017 – date	• N Dip Chemical Engineering
Mr. Zahir Ismail	Acting Head of Internal Audit (Co-opted member)	01 November 2018 –date	• BCompt Degree - UNISA
Dr. Jan Rijn Zeevaart	Acting Divisional Executive: Research & Development	01 August 2019 – date	• PhD (Radiochemistry)
Mr. Monde Mondi	Group Executive: Human Resources and Real Estates Asset Management Mr. Monde Mondi forming part of the full time Task Team	01 September 2017 – date	• Bachelor of Philosophy • BA Education • Masters Diploma (HRM) • Masters Artium (Labour Relations & HRM) • Management Development Programme

Name	Capacity	Appointed date	Qualifications
Ms. Ntebatse Matube	Acting GE: HR & Ream	01 February 2021	• MBA • Diploma: Advanced Professional Management Programme • Diploma: Training & Development • Diploma: Human Resource Management • BA (Education) • Certificate: Capable Manager Programme • Certificate in PR Practice
Mr. Fortune Mkhabela	Chief Risk Officer (ex-officio member)	01 January 2018 – date	• B. Com (Accounting) • Honours B. Com (Auditing) • Certified Internal Auditor (CIA) • Certification in Control Self-Assessment • Certificate in Public Sector Risk Management • 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. Nikelwa Tengimfene	General Manager: Corporate Communication & Stakeholder Relations	01 September 2017 - date	• MA (Industrial & Organisational Psychology) UNISA



9. RISK MANAGEMENT

Enterprise-wide Risk Management's principal objective is to increase the likelihood of Necsa achieving its objectives by optimally balancing risk and reward. The methodologies 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, to ensure alignment with best practice.

The Necsa Group Risk Management Framework was approved by the Board in May 2021. The Framework 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.

The company's risk appetite has been defined as "No risk may remain in the very high (unacceptable) category (16≤ rating ≤25) for longer than two consecutive quarters before being managed into a more acceptable (lower) risk category (rating ≤15)".

RISK MANAGEMENT ASSURANCE

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

The Group EXCO Risk Management Committee assists the Executive Management Committee (EXCO) and the Board with implementation of the Risk Management Framework 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 Group EXCO Risk Management Committee 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 RISKS

The top risks currently faced by Necsa are indicated as follows:

NECSA CORPORATE

Single Supplier of fuel elements & target plates

Low Enriched Uranium (LEU) fuel plates are essential in the manufacturing of Fuel Elements and Control Rods for SAFARI-1. The security of supply risk is being addressed through a number of strategic interventions including the qualification of an alternative or 2nd supplier of fuel and 3 years on-site buffer inventory requirement.

Residual Risk Level is at 12.

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. Also embarking on Uranium recovery project.

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

Construction of a new Multi-Purpose Reactor as a source of neutrons

Mitigation actions include SAFARI-1 to run until 2030 and preferable in parallel with MPRR for three to five years. Specification requirements for RFQ's of MPRR are in place.

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 decentralised 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.

Necsa loss of institutional knowledge

This risk refers to Necsa's effectiveness when it comes to management of high turnover of scarce skills employees. Mitigation action includes conduct knowledge risk assessment and monitor line management implementation of related corrective actions; conduct tacit knowledge capture and investigate establishment of document management system.

Residual Risk Level is at 20.

COVID-19 DISASTER RISKS

The top Covid-19 risks currently faced by the Group are indicated as follows:

Necsa Group's business interruption

Necsa group entities have suffered a significant loss of revenue due to business interruption emanating from the Covid-19 disaster management measures undertaken by South Africa and other countries around the world with which Necsa entities conduct business. The travel restrictions imposed worldwide has made it extremely difficult and, in some instances, impossible to conduct business during the period March - June 2020.

An assessment of the overall expected Covid-19 economic impact on the Necsa Group and its operations was conducted and request of Covid -19 relief funds has been submitted to the Board and DMRE.

Necsa continues to hold online engagements with clients and developments in each of the countries are closely monitored to ensure that business resumes as and when conditions allow.

Necsa has been amending Its Business Continuity Plan in line with the country's Covid-19 Alert levels to ensure that there is continuous production at an appropriate scale for each given Alert level.

The Residual Risk Level is at 25.

Employee's exposure to Covid-19 (Possible employee infections)

In the early days of the Covid-19 outbreak in the country, NECSA promptly put in measures to mitigate against Infections of employees within the campus. However, the rate of Covid-19 Infections continues to rise in the country, and more so in Gauteng, a domicile province for most of the Necsa Group employees. Given the current trend, Management had to accept and prepare for the eventuality of employees been Infected. As a result, the mitigation plan had to now address more the need to combat spread. Thus to say, in the event one of the employees is Infected, how can the spread be combated. Accordingly; a detailed Health and Safety Risk assessment was conducted and thus informed the following mitigating measures:

- To an extent possible, allow employees to work from home.
- Online meetings.
- All International travel has been suspended.
- Online Covid-19 awareness.
- Employees encouraged to disclose their recent (past month) international travels and/or exposure to 3rd parties who have taken such travels.
- All employees on site must wear appropriate PPE and adhere to daily screening before entering Pelindaba.
- Risk adjustment approach strategy has been developed and implemented on resumption of operations /work on site aligned with Government risks alert levels.

Residual Risk Level is at 25.

Necsa Gate 3 entrance reception area

10. 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.

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.

10.1 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 an incubator of new business ventures. In addition, a Business Development Department resides in the R&TD Division.

Table 56: Financial capital indicators

Necsa Group	2016	2017	2018	2019	2020	2021
Necsa corporate sales	R382m	R401m	R388m	R429m	R405m	R355m
NTP Group net profit	R183m	R203m	R122m	R147m	(R74m)	R35m
Pelchem Group net profit	R29m	(R36m)	(R35m)	(R47m)	(R63m)	(R68m)
Group bank overdraft	R85m	R124m	R32m	R46m	R24m	R14m

» Necsa's **manufactured capital** includes its buildings, infrastructure, plant and equipment used in its operations. It is managed jointly by REAM, Engineering and Technical Services division, Security Services and Corporate Finance departments, as well as the respective facility operating units.

Table 57: Manufactured capital indicators

Necsa Group	2016	2017	2018	2019	2020	2021
Research reactor availability	303 days	298 days	299 days	276.06 days	302.9 days	299 days

» Necsa's **intellectual capital** includes the organisation's stock of intellectual property, as well as the tacit knowledge embedded in systems and possesses. Necsa manages its intellectual capital through the Intellectual Property (IP) office in the Business Development Department and the Knowledge Management Unit. The R&TD Division generates new IP.

Table 58: Intellectual capital indicators

Necsa Group	2016	2017	2018	2019	2020	2021
Innovation disclosure	13	15	10	10	8	8
Research publications	55	43	45	44	35	33
Internationally granted patents	16	10	7	2	2	2

10.2 SOCIAL SUSTAINABILITY

» 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 managing this capital.

Table 59: Human capital indicators

Necsa Group	2016	2017	2018	2019	2020	2021
Staff number	1 857	1 912	1 962	1 900	1 821	1825
Trade test conducted	450	304	437	384	334	210
Disabling injury incident rate	0.78	1.1	1.03	0.68	0.56	0
Non-unionised staff percentage	16	15.3	14.61	11.98	7.18	7.35

10.3 ENVIRONMENTAL SUSTAINABILITY

» Necsa's Environmental Management Group takes responsibility for environmental monitoring on the Pelindaba site and has a veterinarian on call to attend to wildlife in need. The Nuclear Liability Management Department performs ongoing decommissioning and decontamination while the Utilities and Facilities Department manages water and electricity consumption.

Table 60: Natural capital indicators

Necsa Group	2016	2017	2018	2019	2020
Execution of animal decommissioning and decontamination plan	90%	99%	122.8%	85.15%	27.01%
Public dose impact as% of allowable limit (0.250 mSv)	2.2	2.2	1.94	1.16	1.47
Percentage of permitted effluent released to Crocodile River (250 000m)	43	29	20.5	27	41
Percentage of permitted fluoride emission	34	25	12	11	8
Annual electricity usage	86 GW.h	76 GW.h	67 GW.h	69.61GW.h	57.61GWh
Annual water usage	105 978m^3	815 500 m^3	776 920m^3	771 400 m^3	827 000 m^3

Necsa Visitor Centre

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Gd
Tb
Dy
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Ru
Hf
Hassium
Meitnerium
Darmstadtium
Terbium
Gadolinium
Europium
100 ml

11. KNOWLEDGE DISSEMINATION

Addendum B: List of research publications

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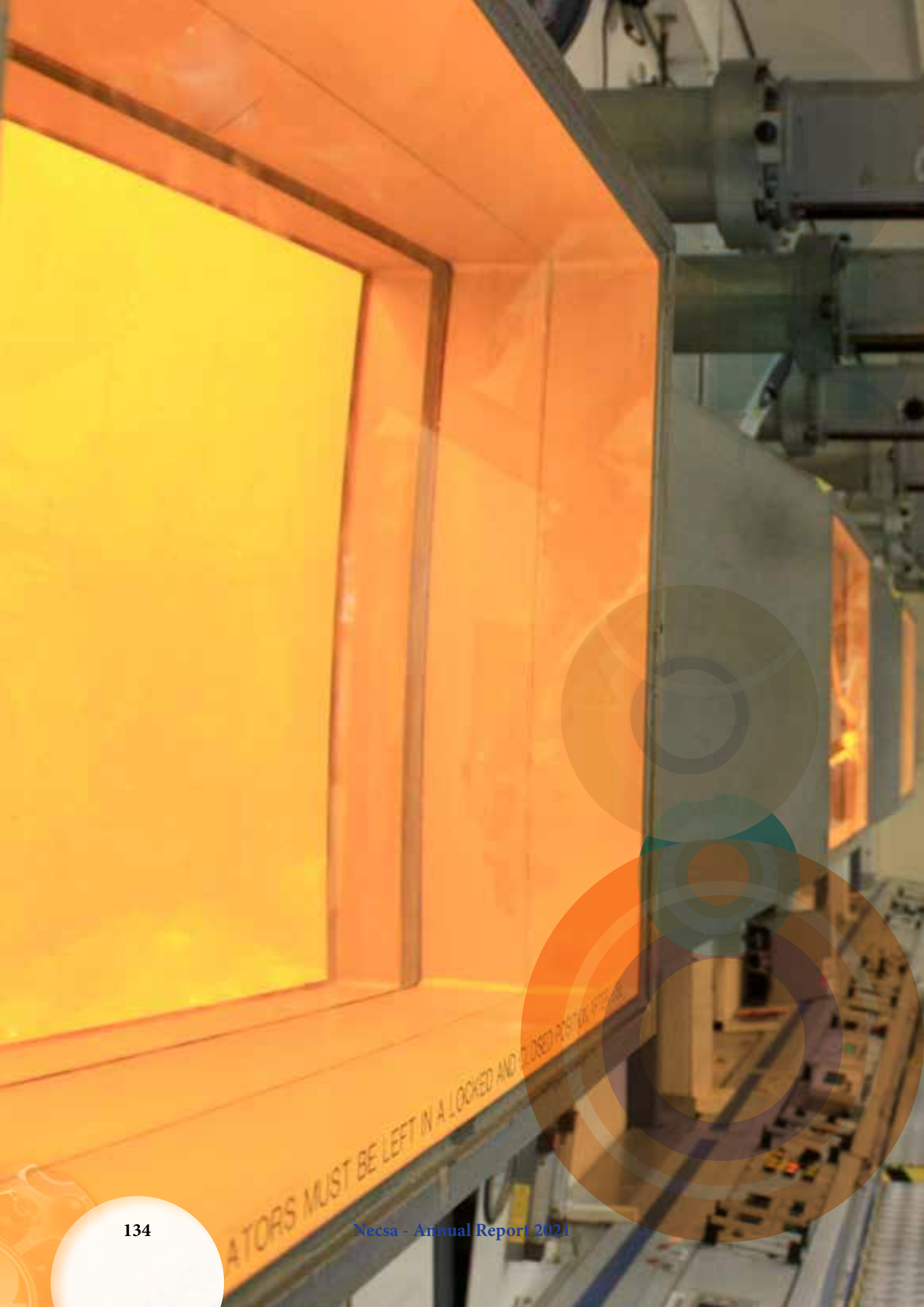

12. FINANCIAL REPORT

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

(Registration number 2000/003735/06)

Trading as Necsa

Audited Annual Financial Statements for the year ended 31 March 2021

Index

The reports and statements set out below comprise the Annual Financial Statements presented to the shareholders:

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Published

Friday, 15 October 2021

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	Mr. L Tyabashe
	Mr. DR Nicholls
	Dr. NT Magau
	Ms. L Noge Tungamirai
	Dr. GJ Davids
	Ms. SKN Masango
	Ms. PE Monale
	Ms. A Chowan
	Mr. LJ Shayi
	Ms. BM Makgopa
	Mr. MJ Maboa
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 Mineral Resources and Energy
Registered Auditors	Auditor General of South Africa
Company Secretary	Mr. MZ Jantjie (Acting Company Secretary)
Company registration number	2000/003735/06
Supervised by	The financial statements were supervised by:
	Ms. Hlengiwe Khumalo (Group CFO)

Directors' Responsibilities and Approval

The Directors are required in terms of the Companies Act 71 of 2008 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.

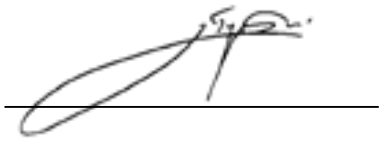
The Directors acknowledge that they are ultimately responsible for the system of internal financial control established by the Group and place considerable importance on maintaining a strong control environment. To enable the Directors to meet these responsibilities, they set standards for internal control 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 Groupís 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 and to the best of their knowledge, 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 Groupís cash flow forecast for the year ended 31 March 2022 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.

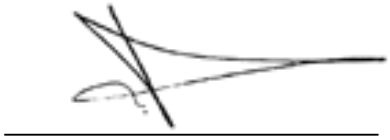
The external auditor is responsible for independently auditing and reporting on the Group's Annual Financial Statements. The Annual Financial Statements have been examined by the Group's independent auditor and their report is presented on pages 14.

The Annual Financial Statements set out on pages 157 to 287, which have been prepared on the going concern basis, were approved by the Directors on 15 October 2021 and were signed on their behalf by:



MR. L. TYABASHE

Group Chief Executive Officer



MR. DR NICHOLLS

Necsa Chairperson

Pelindaba

Friday, 15 October 2021

Report of the Audit and Risk Committee

We herewith present our report for the financial year ended 31 March 2021

1. AUDIT AND RISK COMMITTEE REPORT

The Necsa Audit and Risk Committee (ARC) is a formal statutory committee in terms of Section 51(1)(a)(ii), Section 77 of the Public Finance and Management Act read together with Treasury Regulations 27.1, the Companies Act and functions as a governance structure of the entity. The committee functions within documented terms of reference and complies with relevant legislation, regulation and governance codes. This report of ARC is presented to the stakeholders in compliance with the requirements of the New Companies Act 71, of 2008 and the King†Code of Governance Principles.

2. COMPOSITION OF THE COMMITTEE

The committee is comprised of five independent non executive directors. The committee is elected by the Necsa Board subsequent to the Board appointment by the Minister. The committee remains fully capacitated since the appointment of the new Board in January 2020.

3. AUDIT AND RISK COMMITTEE TERMS OF REFERENCE

The ARC has adopted a 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. The terms of reference are available on request.

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

Mr. LJ Shayi	14 April 2020	Master of Business Leadership, Master of Science in Chemistry BSc (Hons): Majors in Physical and Inorganic Chemistry, Bsc: Majors in Chemistry and Physics
Ms. A Chowan	14 April 2020	CA(SA) Registered Auditor, Bachelor of Accountancy, Post Graduate Diploma in Accounting, LLB degree
Ms. S Masango	14 April 2020	Masters in Nuclear Physics, Hons in Nuclear Physics, BSc Physics & Electronics (major in electronics), Project Management Diploma, Certificate in Detector and Instrumentation Technology
Ms. L Noge Tungamirai	14 April 2020	Master of Business Administration, Master Network Engineering Diploma, IT Programming Diploma
Dr. GJ Davids	15 January 2021	D Phil, Master Degrees in Public Administration, B.A. (Hon) Development Administration B.A Public Administration.

The Committee 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.

5. ROLES AND RESPONSIBILITIES.

5.1 Statutory Duties

The Committeeís role and responsibilities include statutory duties as per the Companies Act, PFMA, Treasury Regulations and further responsibilities as assigned to it by the Board of Directors.

5.2 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 Audit 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. The committee, in consultation with executive management, agreed to the engagement letter, audit plan and budgeted fee for the 2021 year.

5.3 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 2021 and based on the information provided to the Committee, considers that they comply in all material respects with the requirements for 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. The ARC has:

- Reviewed and approved the appropriateness of accounting policies, disclosure policies and the effectiveness of internal financial controls
- 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

Report of the Audit and Risk Committee

- Reviewed and discussed with the Accounting Authority, Performance Information submitted to the Auditor General.

5.4 Internal Financial Controls

While the Board is responsible for the internal control systems and for reviewing their effectiveness, responsibility for their actual implementation and maintenance rests with executive management. The systems of internal control are based on established organizational structures, together with written policies and procedures, and provide for suitably qualified employees, segregation of duties, clearly defined lines of authority and accountability.

As a result of the issues outlined under the Finance Section in this report as well as the external audit opinions for the three previous years, there is room for improvement in the internal financial function 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.

5.5 Combined Assurance

Ensure the combined assurance model addresses all significant risks facing the group; and by monitoring of the relationship between external and internal assurance providers and the group.

5.6 Going Concern

Notwithstanding the liquidity issues at Necsa and its subsidiary Pelchem SOC Ltd, 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.

Despite the previous losses that Necsa have made historically, the company has a trade record of continuing in operation, wherein this resilience will continue into the foreseeable future. Section 12 of the Nuclear Energy Act supports the mandate of the company in support of going concern. Furthermore, Necsa has the ability to pay its short term obligations, which it will do through the initiatives documented including through working capital management, austerity measures implemented, increasing revenue streams and prioritisation of cash generating projects to name a few. Refer to note 39 for additional details.

5.7 Internal Audit

The Committee is responsible for ensuring that the Groupís 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 functionís 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 Groupís operations.

The Chief Audit Executive 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.

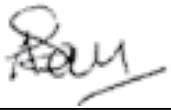
5.8 Auditorís Report

To confirm the independence of the external auditors, the Committee is satisfied that the audit was conducted without influence from Management. To this end, the Committee remains open to discussing any other issues that the auditors may have, without the presence of Management.

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.

The Committee expresses its appreciation to the accounting authority, the senior management team, internal audit and the Auditor General for their continued support and dedication during the year under review.

On behalf of the Audit and Risk Committee:



MS A CHOWAN

Chairperson Audit and Risk Committee

Friday, 15 October 2021

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 are required of a public company in terms of the Act and that all such returns are true, correct and up to date.

In my opinion as Acting Company Secretary, I hereby confirm, in terms of the Companies Act 71 of 2008, for the year ended 31 March 2021, that the Group has lodged with the Commissioner of Companies all such returns as are required of a public company in terms of this Act and that all such returns are true, correct and up to date.

Mr. MZ Jantjie

Acting Company Secretary

Friday, 15 October 2021

Directors' Report

The Directors have pleasure in submitting their report on the Annual Financial Statements of The South African Nuclear Energy Corporation SOC Limited and its Group Companies for the year ended 31 March 2021.

1. NATURE OF BUSINESS

Incorporated in the year 2000, the South African Nuclear Energy Corporation SOC Limited (Necsa) is mandated to undertake and promote research and development (R & D) in the field of nuclear energy and radiation sciences and technology. The company is also responsible for processing source material, special nuclear material and restricted material and to reprocess and enrich these. Apart from its main activities at Pelindaba, which include operation and utilisation of the SAFARI 1 research reactor, Necsa also manages and operates the Vaalputs National Radioactive Waste Disposal Facility in the Northern Cape on behalf of the National Radioactive Waste Disposal Institute (NRWDI).

Necsa engages in commercial business mainly through its wholly owned commercial subsidiaries NTP Radioisotopes SOC Ltd (NTP), which is responsible for a range of radiation based products and services for healthcare, life sciences and industry, and Pelchem SOC Ltd (Pelchem), which supplies fluorine and fluorine based products. Both subsidiaries, together with their subsidiaries, supply local and foreign markets, earning valuable foreign exchange for South Africa.

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 Republicís 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 (NILís) 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 Annual Financial Statements.

3. SHARE CAPITAL

There have been no changes to the authorised or issued share capital during the year under review.

4. DIVIDENDS

Refer to the Statement of Changes in Equity for dividends declared and paid to shareholders during the year.

Directors' Report

5. DIRECTORATE

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

Directors	Designation	Appointed
Mr. L Tyabashe	Group Chief Executive Officer	Appointed 01 January 2021
Mr. AB Myoli	Acting Group Chief Executive Officer	Appointed 09 July 2019, Until 31 December 2020
Mr. DR Nicholls	Chairperson of the Board	Appointed 17 January 2020
Dr. NT Magau	Non executive	Appointed 17 January 2020
Ms. L Noge Tungamirai	Non executive	Appointed 17 January 2020
Dr. GJ Davids	Non executive	Appointed 17 January 2020
Mr. MJ Maboa	Non executive	Appointed 17 January 2020
Ms. SKN Masango	Non executive	Appointed 17 January 2020
Ms. PE Monale	Non executive	Appointed 01 February 2020
Ms. A Chowan	Non executive	Appointed 17 January 2020
Mr. LJ Shayi	Non executive	Appointed 17 January 2020
Ms. BM Makgopa	Non executive	Appointed 01 February 2020

6. 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.

Directors' Report

7. INTERESTS IN SUBSIDIARIES

Name of Company	Nature of Business	Place of Incorporation	Issued Share Capital		Effective percentage		Number of Shares		Profit/(Loss) after taxation	
			2021	2020	2021	2020	2021	2020	2021	2020
			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	60	112
Cyclofil SOC Ltd (5)	Dormant	South Africa	1	1	100	100	1	1	-	-
NTP Radioisotopes SOC Ltd (5)	Marketing and distribution of radiopharmaceuticals	South Africa	220	220	100	100	220	220	23,696	(73,982)
NTP Logistics SOC Ltd (1)	Logistics	South Africa	100	100	51	51	51	51	7,740	1,476
NTP Radioisotopes Europe SA (1)	Supply of isotopes and accessories for the radiographic non-destructive testing market.	Belgium	726,137	726,137	100	100	4,734	4,734	-	-
AEC Amersham SOC Ltd (1)	Marketing of radiopharmaceutical products	South Africa	4,000	4,000	100	100	4,000	4,000	1,778	(5,533)
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	2,053	5,605
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	5,481	(1,138)
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	8,713	(761)
Pelchem SOC Ltd (5)	Fluorochemical products	South Africa	770,310	770,310	100	100	770,310	770,310	(66,229)	(61,355)
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	-	-

Directors' Report

Name of Company	Nature of Business	Place of Incorporation	Issued Share Capital		Effective percentage		Number of Shares		Profit/(Loss) after taxation	
			2021	2020	2021	2020	2021	2020	2021	2020
			R	R	%	%			R'000	R'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	-	-

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.

8. INTEREST IN ASSOCIATES

Name of Company	Nature of Business	Place of Incorporation	Issued Share Capital		Effective Percentage		Number of Shares	
			2021	2020	2021	2020	2021	2020
			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 Radioisotopes 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

Directors' Report

9. SHAREHOLDER

The Companyís sole shareholder is the State, represented by the Minister of Mineral Resources and Energy.

10. EVENTS AFTER THE REPORTING PERIOD

- Ms Precious Hawadi CA(SA) was appointed as Acting Necsa Group Chief Financial Officer on 1 June 2021.
- Ms Fakazile Nyembe was permanently appointed as Company Secretary for Necsa Group on 1 June 2021.

11. 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 2021, the company had accumulated losses of R 767 million and that the company's totalliabilities exceed its assets by R 49 million.

Despite the previous losses that Necsa have made historically, the company has a track record of continuing in operation, wherein this resilience will continue into the foreseeable future. Section 12 of the Nuclear Energy Act supports the mandate of the company in support of going concern. Furthermore, Necsa has the ability to pay its short term obligations, which it will do through the initiatives documented including through working capital management, austerity measure implementation, increasing revenue streams and prioritization of cash generating projects to name a few.

Refer to note 39 for additional details around the going concern consideration of the company.

12. AUDITORS

The Auditor General of South Africa continued in office as auditors for the company and its subsidiaries for 2021.

13. COMPANY SECRETARY

Mr. MZ Jantjie (Acting Company Secretary).

Postal address	PO Box 582
	Pretoria
	0001
Business address	Elias Motsoaledi Street Extension (Church Street West)
	R104 Pelindaba
	Brits Magisterial District, Madibeng Municipality
	North West Province
	0240

14. COMPLIANCE WITH LEGISLATION

The Directors believe the Group has complied, in all material respects, with the provisions of the Companies Act No. 71 of 2008, Public Finance Management Act No.1 of 1999 and the Nuclear Energy Act No. 46 of 1999 and other applicable legislation during the year under review.

Auditors 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 set out on pages 157 to 287 which comprise the consolidated and separate Statement of Financial Position as at 31 March 2021, the consolidated and separate Statement of Profit or Loss and Other Comprehensive Income, the consolidated and separate Statement of changes in equity and the consolidated and separate Statement of Cash Flows for the year then ended, as well as 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

Consolidated financial statements

3. 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 International Financial Reporting Standard (IFRS) 10, Consolidated financial statements, as the consolidation could not be substantiated with supporting workings that corroborate the appropriateness of elimination journal entries. The group 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.

Going concern

4. The group has adverse solvency ratios with cash deficits being forecast for the next year. I was unable to obtain sufficient appropriate audit evidence to confirm the reasonableness of the group's cash flow forecasts and the related assumptions, conditions and events to support the group's assessment of the group's viability to continue as going concern. In addition, the consolidated and separate financial statements contain material misstatements and limitations of scope, as has been reported in the basis for disclaimer of opinion section of this auditor's report, which creates an uncertainty about the reliability of evidence obtained and of the accounting records upon which the group's forecasts are based. I therefore noted a material uncertainty in the group's ability to continue as a going concern. I was unable to confirm the extent of this material uncertainty by alternative means.

5. The disclosure in note 39 to the consolidated and separate financial statements does not clarify that the extent of financial support from its shareholder is contingent on approval of its annual budget and corporate plan and turn-around strategies proposed to the group's ultimate shareholder.

Decommissioning and Decontamination (D&D) on stage 1 liability and asset

6. I was unable to obtain sufficient appropriate audit evidence for the Decommissioning and decontamination stage 1 liability due to the lack of appropriate audit evidence to support the group's estimated timing and quantum of cash flows used in determining the liability, because management did not execute Decommissioning and decontamination stage 1 in accordance with their plan. The group did not have adequate systems of internal control in place in respect of record keeping and the recording of transactions in the financial statements to substantiate the budget used as a basis for the calculation of the Decommissioning and decontamination stage 1 liability. I was unable to confirm the Decommissioning and Decontamination on stage 1 liability by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Decommissioning and decontamination stage 1 liability stated at R3 411 338 000 (2020: R2 901 145 000) in note 41 to the consolidated and separate financial statements.

Auditors Report

7. Due to the limitation imposed on the Decommissioning and Decontamination (D&D) on stage 1 liability I was unable to determine, by alternative means, whether any adjustments are required to the Decommissioning and Decontamination (D&D) on stage 1 asset stated at R3 411 338 000 (2020: R2 901 145 000) in note 41 to the consolidated and separate financial statements.

8. I was unable to determine whether any adjustments were necessary to Acceptance of decommission and decontamination stage 1 stated at -R352 013 000 (2020: R698 620 000) in note 41 of the consolidated and separate financial statements due to the limitation placed on Decommissioning and decontamination stage 1 liability, related to the lack of appropriate audit evidence to support the group's estimated cash flows in determining the liability, which informs the calculation of the Acceptance of decommission and decontamination stage 1. Furthermore, as a result of the limitation placed on the Decommissioning and decontamination stage 1 liability, related to the lack of appropriate audit evidence to support the group's estimated cash flows in determining the liability, I was unable to determine whether any adjustments were necessary to Government Grant Income (Decommissioning and Decontamination Stage 1) stated at R352 013 000 (2020: -R698 620 000) in note 41 of the consolidated and separate financial statements, which is a movement to release the government grant to profit or loss based on the Decommissioning and decontamination stage 1 liability.

Property, plant and equipment

9. I was unable to obtain sufficient appropriate audit evidence that the group performed an adequate impairment assessment which considered all indicators of impairment as required by International Accounting Standards (IAS) 36: Impairment of Assets, for all of the classes of Property, plant and equipment. I was unable to confirm that property, plant and equipment are fairly stated by alternative means. Consequently, I was unable to determine whether any adjustment was necessary to Property, plant and equipment stated at R1 408 735 000 (2020: R1 353 101 000) and R1 094 235 000 (2020: R1 037 434 000) in note 4 in the consolidated and separate financial statements, respectively.

10. The group did not perform a useful life reassessment as required by IAS 16: Property, plant and equipment, despite having a large volume of fully depreciated assets still in use and I was unable to determine the full extent of the changes required to useful lives and the related depreciation. Furthermore, I was unable to determine whether any adjustment was necessary to Depreciation of property, plant and equipment stated at R92 963 000 (2020: R89 161 000) and R74 954 000 (2020: R69 802 000) in note 27 of the consolidated and separate financial statements respectively. Consequently, I was unable to determine whether any adjustment was necessary to Property, plant and equipment stated at R1 408 735 000 (2020: R1 353 101 000) and R1 094 235 000 (2020: R1 037 434 000) in note 4 in the consolidated and separate financial statements, respectively.

11. I was unable to obtain sufficient appropriate audit evidence to corroborate all the significant assumptions applied in the revaluation calculation of Land and buildings. I was unable to confirm Land and buildings by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Land and buildings stated at R902 774 000 (2020: R832 946 000) and R874 906 000 (2020: R805 178 000) in note 4 to the consolidated and separate financial statements, respectively.

Revenue

12. I was unable to obtain sufficient appropriate audit evidence that all Revenue from sales of goods was recorded, because the group could not provide me with information or documents to support the amount recorded for Revenue from sales of goods. The group did not have adequate systems of internal control in place including record keeping of all documents to ensure that all transactions and events are recorded in the consolidated and separate financial statements. I could not confirm the Revenue from sale of goods by alternative means. Consequently, I was unable to determine whether any further adjustments were necessary to Revenue from sale of goods stated at R978 125 000 (2020: R1 097 713 000) and R361 581 000 (2020: R413 820 000) in note 26 of the consolidated and separate financial statements, respectively.

13. I was unable to obtain sufficient appropriate audit evidence for Intergroup sales, because the group could not provide me with information or documents to support intergroup sales. Consequently, I was unable to determine by alternative means whether any further adjustments were necessary to Inter group sales stated at R269 374 000 (2020: R250 292 000) in note 26 of the separate financial statements.

14. The group did not correctly record Revenue Government Grants stated at R663 830 000 in note 26 to the consolidated and separate financial statements as it included revenue of R42 353 075 which relates to Revenue Other grants. The effect on the consolidated and separate financial statements was that Revenue Government Grants was overstated by R42 353 075 and Revenue Other grants was understated by R42 353 075.

15. I was unable to obtain sufficient appropriate audit evidence for Revenue - Other grants, because the group could not provide me with information or documents to support the amount reported for Revenue - Other grants. Consequently, I was unable to determine by alternative means whether any further adjustments were necessary to Other grants stated at R25 380 000 (2020: R94 445 000) and R25 380 000 (2020: R94 445 000) in note 26 of the consolidated and separate financial statements, respectively.

Auditors Report

16. During 2020, the financial statements of the subsidiary Pelchem were materially misstated. Consequently, I was unable to determine any adjustment that was necessary to Revenue from sale of goods stated at R1 097 713 000 in note 26 of the consolidated financial statements. My audit opinion on the financial statements for the period ended 31 March 2020 was modified accordingly. My opinion on the current year financial statements is also modified because of the possible effect of this matter on the comparability of the Revenue from sale of goods for the current period.

Deferred income

17. I was unable to obtain sufficient appropriate audit evidence for Deferred income, due to the status of the accounting records in the current and previous years. The group 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, due to a lack of supporting documents for journal entries processed in the financial statements. I could not confirm Deferred income by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Deferred income stated at R885 055 000 (2020: R709 939 000) in note 19 of the consolidated and separate financial statements.

18. The group did not recognise revenue of R433 836 682 from Government Grants where all the conditions were met as required IAS 20: Government grants. The effect on the consolidated and separate financial statements was that Deferred income, stated at R885 055 000 (2020: R709 939 000) in note 19 of the consolidated and separate financial statements, was overstated by R433 836 682 and Revenue Government grants, stated at R663 830 000 in note 26 to the consolidated and separate financial statements, was understated by R433 836 682. Additionally, there was an impact on the surplus for the period and on the accumulated surplus in the consolidated and separate financial statements.

Provisions

19. The group calculated the Provisions - Decommissioning and waste disposal using assumptions that were last updated in 2010 even though there are factors that indicated that the assumptions have changed. The assumptions were not updated as required by IAS 37: Provisions, contingent liabilities and contingent assets. As the group did not maintain adequate records, I was unable to determine the full extent of the misstatement of Provisions - Decommissioning and waste disposal as it was impracticable to do so. Consequently, I was unable to determine by alternative means whether any adjustments were necessary to Provisions - Decommissioning and waste disposal stated at R712 182 000 (2020: R594 770 000) and R591 489 000 (2020: R502 932 000) in note 20 of the consolidated and separate financial statements, respectively.

20. I was unable to obtain sufficient appropriate audit evidence for the Decommissioning and decontamination provision of the subsidiary Pelchem, due to a breakdown in the internal control surrounding the proper accounting of the provision. I was unable to obtain sufficient appropriate audit evidence to confirm the inputs and assumptions used in the calculation of the Decommissioning and decontamination provision. I could not confirm the decommissioning and decontamination provision by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Provisions - Decommissioning and waste disposal stated at R712 182 000 (2020: R594 770 000) in note 20 of the consolidated financial statements.

21. The group implemented a new payroll and leave management system but did not ensure that accrued leave balances were correctly migrated from the old system to the new system, which resulted in numerous errors for which the full extent could not be determined. I was unable to confirm or verify by alternative means Provisions – Employee benefit accrual of R133 957 000 and R86 313 000 included in note 20, of the consolidated and separate financial statements respectively, at a total amount of R133 957 000 and R86 313 000 as at 31 March 2021. As a result, I was unable to determine whether by alternative means any adjustments were necessary to recorded or unrecorded Provisions – Employee benefit in note 20, and the related elements in the statement of financial performance, statement of changes in net assets and cash flow statement.

22. During 2020, I was unable to obtain sufficient appropriate audit evidence for Provisions – Employee benefit accrual due to the status of the accounting records. Consequently, I was unable to determine whether any adjustment was necessary to Provisions – Employee benefit accrual stated at R76 074 000 and R51 485 000 in note 20 of the consolidated and separate financial statements, respectively. My audit opinion on the financial statements for the period ended 31 March 2020 was modified accordingly. My opinion on the current year financial statements is also modified because of the possible effect of this matter on the comparability of the Provisions – Employee benefit accrual for the current period.

Auditors Report

Trade and other receivables

23. I was unable to obtain sufficient appropriate audit evidence to confirm that the group's calculation of expected credit losses (ECLs) was performed in accordance with IFRS 9: Financial Instruments, because the group could not provide the historically observed default rates over the expected life of the Trade and other receivables, adjusted for current conditions and forward-looking estimates. I am unable to determine by alternative means whether any adjustments were required to Expected Credit Losses as stated at R59 239 000 (2020: R89 914 000) and R262 840 000 (2020: R291 292 000) in note 12 to the consolidated and separate financial statements, respectively. Consequently, I was unable to determine by alternative means whether any adjustments were necessary to Trade and other receivables stated at R378 928 000 (2020: R319 384 000) and R183 348 000 (2020: R59 634 000) in note 12 of the consolidated and separate financial statements, respectively.

24. Trade and other receivables includes an amount of R90 380 650 for which the group could not provide supporting documents to confirm that the amounts were recorded in the correct financial period, due to inadequate records management. Consequently, I was unable to determine whether any adjustments were necessary to Trade and other receivables stated at R378 928 000 (2020: R319 384 000) and R183 348 000 (2020: R59 634 000) in note 12 of the consolidated and separate financial statements, respective.

25. During 2020, I was unable to obtain sufficient appropriate audit evidence for Trade and other receivables and uncollectable debt included in Other operating income and I was unable to confirm the trade and other receivablesy of the subsidiary Pelchem by alternative means. Consequently, I was unable to determine whether any adjustment was necessary to Trade receivables stated at R378 928 000 and Un-collectable debt stated at Nil in the consolidated financial statements. My audit opinion on the financial statements for the period ended 31 March 2020 was modified accordingly. My opinion on the current year financial statements is also modified because of the possible effect of this matter on the comparability of the Trade and other receivables for the current period.

Other operating expenses

26. I was unable to obtain sufficient appropriate audit evidence for other operating expenses, due to the status of the accounting records. Supporting evidence was not provided for certain recorded transactions, which imposed a limitation of scope. Consequently, I was unable to determine by alternative means whether any adjustment was necessary to other operating expenses stated at R1 266 965 000 (2020: R1 062 798 000) and R1 022 277 000 (2020: R826 446 000) in the consolidated and separate financial statements, respectively. Consequently, I am unable to determine by alternative means whether any adjustment are required to Trade and other payables stated at R259 281 000 (2020: R224 850 000) and R132 030 000 (2020: R136 614 000) in note 21 to the consolidated and separate financial statements respectively.

Administration and fees

27. I was unable to obtain sufficient appropriate audit evidence for Administration and fees, because the group was unable to provide the information and supporting documentation for Administration and fees. I could not confirm the Administration and fees by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to administration and fees stated at R268 126 000 (2020: R245 810 000) and R147 460 000 (2020: R137 826 000) in the consolidated and separate financial statements, respectively. Consequently, I am unable to determine by alternative means whether any adjustment are required to Trade and other payables stated at R259 281 000 (2020: R224 850 000) and R132 030 000 (2020: R136 614 000) in note 21 to the consolidated and separate financial statements respectively.

Cost of sales

28. I was unable to obtain sufficient appropriate audit evidence to confirm Cost of sales due to the status of the accounting records. I was unable to obtain supporting audit evidence for certain recorded transactions which imposed a limitation of scope. I could not confirm the Cost of sales by alternative means. Consequently, I was unable to determine by alternative means the extent of adjustment necessary to Cost of sales which is stated at R576 217 000 (2020: R800 221 000) and R182 565 000 (2020: R311 835 000) in note 46 of the consolidated and separate financial statements, respectively. Consequently, I am unable to determine by alternative means whether any adjustment are required to Trade and other payables stated at R259 281 000 (2020: R224 850 000) and R132 030 000 (2020: R136 614 000) in note 21 to the consolidated and separate financial statements respectively.

29. Cost of sales which is stated at R576 217 000 and R182 565 000 in note 46 of the consolidated and separate financial statements, respectively, is understated by R70 597 792 as a result of transactions that were not recorded in the correct financial period. This occurred due to inadequate controls for the recording of transactions. Consequently, Accumulated loss stated at R196 043 000 and R767 549 000 in the consolidated and separate financial statements, respectively is understated by R70 597 792.

Auditors Report

Employee cost

30. I was unable to obtain sufficient appropriate audit evidence for Employee costs because the group was unable to provide information and supporting documents to support the amount recorded for Employee costs due to an inadequate system of internal control. I could not confirm the Employee cost by alternative means. Consequently, I was unable to determine by alternative means whether any further adjustments were necessary to Employee costs stated at R1 086 366 000 (2020: R1 041 345 000) and R782 853 000 (2020: R774 204 000) in note 27 of the consolidated and separate financial statements, respectively.

Inventories

31. During 2020, I was unable to obtain sufficient appropriate audit evidence for Inventory due to the status of the accounting records. Consequently, I was unable to determine whether any adjustment was necessary to Inventory stated at R364 863 000 and R65 187 000 in note 11 of the consolidated and separate financial statements, respectively. My audit opinion on the financial statements for the period ended 31 March 2020 was modified accordingly. My opinion on the current year financial statements is also modified because of the possible effect of this matter on the comparability of the Inventory for the current period.

Investment income

32. I was unable to obtain sufficient appropriate audit evidence for the Interest Income: Stage 1 decommissioning and decontamination stated at R189 813 000 (2020: R229 273 000) and R189 813 000 (2020: R229 127 000) in note 28 of the consolidated and separate financial statements, because this interest income is calculated in relation to the Decommissioning and decontamination stage 1 asset, which is subject to several limitations. Consequently, I was unable to determine by alternative means whether any adjustments were necessary to the Interest Income: Stage 1 decommissioning and decontamination stated at R189 813 000 (2020: R229 273 000) and R189 813 000 (2020: R229 127 000) in note 28 of the consolidated and separate financial statements, respectively.

Finance cost

33. I was unable to obtain sufficient appropriate audit evidence for the Finance cost on D&D provisions, calculated in relation to the Decommissioning and decontamination stage 1 and stage 2 liabilities, due to numerous limitations placed on the audit of the calculation of these liabilities. Finance cost on D&D provisions is calculated for and recognised on these liabilities and therefore the limitation imposed on my audit of the liabilities impeded my ability to conclude on the amount presented for Interest expensed. I could not confirm the amount by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Finance cost on D&D provisions stated at R191 139 000 (2020: R229 610 000) in note 29 of the consolidated and separate financial statements.

Decommissioning and Decontamination (D&D) on stage 2 liability

34. I was unable to obtain sufficient appropriate audit evidence for the Decommissioning and decontamination stage 2 liability due to the lack of appropriate audit evidence to support the group's estimated timing and quantum of cash flows used in determining the liability. I was unable to confirm the liability by alternative means. Consequently, I was unable to determine by alternative means whether any adjustments were necessary to Decommissioning and decontamination stage 2 liability stated at R145 764 000 (2020: R114 132 000) in note 41 to the consolidated and separate financial statements.

35. Due to the limitation imposed on the Decommissioning and Decontamination (D&D) on stage 2 liability I was unable to determine, by alternative means, whether any adjustments were required to the Decommissioning and Decontamination (D&D) on stage 2 asset stated at R145 764 000 (2020: R114 132 000) in note 41 of the consolidated and separate financial statements.

Vaalputs After Care Asset

36. The Vaalputs After Care asset is stated incorrectly as a separate asset. In accordance with IAS 16: Property, plant and equipment, the amount of the initially recognized rehabilitation cost should be recognized as a component cost on the item of property, plant and equipment to be rehabilitated. Consequently, Property, plant and equipment of R1 408 735 000 (2020: R1 353 101 000) and R1 094 235 000 (2020: R1 037 434 000) in note 4 of the consolidated and separate financial statements, respectively is understated by R23 582 000 (2020: R24 318 000) and the Vaalputs After Care asset of R23 582 000 (2020: R24 318 000) as stated in note 41 of the consolidated and separate financial statements is overstated by the same amount.

Auditors Report

Investment contribution for future liabilities

37. I was unable to obtain sufficient appropriate audit evidence for the Investment contributions for future liabilities, because the group could not provide documentation to support the methodology and assumptions used in the calculated value due to a breakdown in internal controls regarding record keeping and the recording of transactions. I could not confirm the Investment contribution for future liabilities by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to Investment contributions for future liabilities stated at R58 749 000 (2020: R45 930 000) in note 43 of the consolidated and separate financial statements.

Amounts received in advance

38. I was unable to obtain sufficient appropriate audit evidence for the Amounts received in advance due to the status of the accounting records. The group did not have adequate systems of internal control in place for the reconciliation of all transactions and events to the consolidated and separate financial statements. I could not confirm the Amounts received in advance by alternative means. Consequently, I was unable to determine whether any further adjustments were necessary to the Amounts received in advance stated at R270 101 000 (2020: R157 430 000) and R270 101 000 (2020: R188 468 000) in the consolidated and separate financial statements, respectively.

Trade and other payables

39. During 2020, I was unable to obtain sufficient appropriate audit evidence for Trade and other payables due to the status of the accounting records. Consequently, I was unable to determine whether any adjustment was necessary to Trade and other payables stated at R224 850 000 and R136 614 000 in note 21 of the consolidated and separate financial statements, respectively. My audit opinion on the financial statements for the period ended 31 March 2020 was modified accordingly. My opinion on the current year financial statements is also modified because of the possible effect of this matter on the comparability of the Trade and other payables for the current period.

Deferred tax

40. I was unable to obtain sufficient appropriate audit evidence for Deferred tax for the current year due to the status of the accounting records of a subsidiary, Pelchem. The subsidiary did not have adequate systems of internal control in place for the recording of all transactions and events. The matter was also reported for the subsidiary in the previous year. Additionally, due to the limitations experienced in auditing significant balances in the financial statements of the subsidiary, I was unable to audit the effect that any misstatements in those amounts would have on the Deferred tax balances in the financial statements of the subsidiary. I could not confirm the financial statement item by alternative means. Consequently, I was unable to determine whether any adjustment was necessary to Total Net Deferred Tax Asset stated at R120 537 000 (2020: R126 145 000) in note 10 of the consolidated financial statements.

Consolidated and Separate Statement of Cash Flows

41. Due to the limitations imposed on various balances and line items in the consolidated and separate financial statements in the preceding basis for disclaimer paragraphs of this audit report I was unable to confirm the amounts presented in the Consolidated and Separate Statement of Cash Flows. Consequently, I was unable to determine whether any adjustments were necessary to the amounts presented in the Consolidated and Separate Statement of Cash Flows.

Contingent liabilities

42. I was unable to obtain sufficient appropriate evidence to confirm that all Contingent liabilities are disclosed in note 35 to the consolidated and separate financial statements as I was unable to obtain legal confirmations to support the exclusion of some claims. I was unable to confirm by alternative means whether any further adjustments were required to Contingent liabilities.

Prior period errors

43. I was unable to obtain sufficient appropriate audit evidence for the restatement of the corresponding figures for the items stated in note 38: Prior period errors to the financial statements. As described in note 38 to the financial statements, the restatement was made to rectify prior year misstatements, but the restatement could not be substantiated by supporting audit evidence, due to a breakdown in the internal control surrounding the accounting records. Furthermore, the prior period items that were restated were subjected to scope limitations in the prior year and these circumstances were not sufficiently remedied in the current financial year except for Vaalputs After Care Asset, Vaalputs After Care Liability, Vaalputs Finance Cost and Investment Property. I was unable to confirm the restatement by alternative means. Consequently, I was unable to determine whether any adjustments were necessary to the line items' corresponding figures.

Auditors Report

Disclosures in the consolidated and separate financial statements

44. The consolidated and separate financial statements did not include all the disclosures required by IFRS and were not presented to achieve fair presentation. The disclosure notes to the consolidated and separate financial statements that omitted material IFRS disclosure requirements, along with the related IFRS that was not complied with are listed below. I have not included the omitted disclosure, because it is impractical to do so.

Notes Description	IFRS not complied with
Note 10 - Deferred tax	IAS 12: Income Taxes
Note 11 - Inventory	IAS 2: Inventory
Note 12 – Expected credit loss trade receivables	IFRS 7: Financial Instrument: Disclosure
Note 17 – Leases and Right of Use assets	IFRS 16: Leases
Note 18 – Retirement benefit asset	IAS 19: Employee Benefits
Note 20 – Provisions	IAS 37: Provisions, Contingent Liabilities and Contingent Assets
Note 26 – Revenue	IFRS 15: Revenue from Contracts with Customers
Note 24 – Investment income	IFRS 7: Financial Instrument: Disclosure
Note 29 – Finance costs	IAS 23: Borrowing Costs
Note 30 - Taxation	IAS 12: Income Taxes
Note 35 – Contingencies	IAS 37: Provisions, Contingent Liabilities and Contingent Assets
Note 41 – Decommissioning and Decontamination of Stage 1	
Note 41 – Decommissioning and Decontamination of Stage 2	
Note 43 - Investment contribution for future liabilities	

OTHER MATTERS

46. I draw attention to the matters below. My disclaimer opinion is not modified in respect of these matters.

47. The numerous misstatements identified in the consolidated and separate financial statements are indicative of significant deficiencies in the internal control environment which compromises the credibility of the accounting records and the reliability of the documentation submitted for auditing. As a result of these deficiencies, there is an increased risk of breaches of legislation, internal policies and processes and an increased susceptibility of the public entity to the possible misuse of funds and assets.

48. Furthermore, due to the material uncertainties regarding the going concern and financial distress of the group, there is an increased risk that the public entity may not be trading appropriately in accordance with governance prescripts.

Responsibilities of the accounting authority for the financial statements

49. 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 International Financial Reporting Standards (IFRS) and the requirements of the . Public Finance Management Act 1 of 1999 (PFMA) and the Companies Act of South Africa, 2008 (Act No. 71 of 2008), 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.

50. 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 group or to cease operations, or has no realistic alternative but to do so.

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

51. My responsibility is to conduct an audit of the consolidated and separate financial statements in accordance with the International Standards on Auditing and to issue an auditor's report. However, because 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 financial statements.

Auditors Report

52. I am independent of the group in accordance with the International Ethics Standards Board for Accountants' International code of ethics for professional accountants (including International Independence Standards) (IESBA code) as well as other ethical requirements that are relevant to my audit in South Africa. I have fulfilled my other ethical responsibilities in accordance with these requirements and the IESBA code.

REPORT ON THE AUDIT OF THE ANNUAL PERFORMANCE REPORT

Introduction and scope

53. In accordance with the Public Audit Act 25 of 2004 (PAA) and the general notice issued in terms thereof, I have a responsibility to report on the usefulness and reliability of the reported performance information against predetermined objectives for selected programmes presented in the annual performance report. I performed procedures to identify material findings but not to gather evidence to express assurance.

54. My procedures address the usefulness and reliability of the reported performance information, which must be based on the entinty's approved performance planning documents. I have not evaluated the completeness and appropriateness of the performance indicators included in the planning documents. My procedures do not examine whether the actions taken by the entinty enabled service delivery. My procedures do not extend to any disclosures or assertions relating to the extent of achievements in the current year or 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.

55. 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 programme presented in the entity's annual performance report for the year ended 31 March 2021:

Programme	Pages in the annual performance report
Growth Initiatives Programme	23 – 24

56. I performed procedures to determine whether the reported performance information 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.

57. The material findings on the usefulness and reliability of the performance information of the selected programme are as follows:

Growth Initiatives Programme

KPI - Execution of Annual Plan of Action as approved by DMRE

58. The method of calculation for measuring the planned indicator was not clearly defined and related systems and processes were not adequate to enable consistent measurement and reliable reporting of performance against the predetermined indicator definitions. As a result, limitations were placed on the scope of my work and I was unable to audit the reliability of the achievement of 27% reported against the target of 100% in the annual performance report.

OTHER MATTERS

59. I draw attention to the matter below.

Achievement of planned targets

60. Refer to the annual performance report on pages 21 to 26 for information on the achievement of planned targets for the year. This information should be considered in the context of the material findings on the usefulness and reliability of the reported performance information in paragraph 59 of this report.

Adjustment of material misstatements

61. I identified material misstatements in the annual performance report submitted for auditing. These material misstatements were in the reported performance information of Growth Initiatives Programme. As management subsequently corrected only some of the misstatements, I raised material findings on the usefulness and reliability of the reported performance information. Those that were not corrected are reported above.

Auditors Report

REPORT ON THE AUDIT OF COMPLIANCE WITH LEGISLATION

Introduction and scope

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

63. The material findings on compliance with specific matters in key legislation are as follows:

Annual financial statements

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

65. 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 of non-current assets (Vaalputs After Care Asset) and expenditure (Employee Cost) identified by the auditors in the submitted financial statements were corrected and the supporting records were provided subsequently, but the uncorrected material misstatements and supporting records that could not be provided resulted in the financial statements receiving a disclaimer of opinion.

Procurement and contract management

66. Some of the goods, works or service were not procured through a procurement process which is fair, equitable, transparent and competitive, as required by section 51(1)(a)(iii) of the PFMA.

Expenditure management

67. Effective and appropriate steps were not taken to prevent irregular expenditure amounting to R8 512 000 as disclosed in note 40 to the annual financial statements, as required by section 51(1)(b)(ii) of the PFMA. The majority of the irregular expenditure disclosed in the financial statements was caused by the procurement of goods and/or services via an inappropriate procurement method.

68. I was unable to obtain sufficient appropriate audit evidence that the resources of the public entity were utilised economically, as required by section 57(b) of the PFMA. Due to the disclaimer of opinion on the consolidated and separate financial statements I was unable to confirm whether assets were used economically, and goods and services paid for were actually required, received and used.

Consequence management

69. I was unable to obtain sufficient appropriate audit evidence that disciplinary steps were taken against officials who had incurred irregular expenditure as required by section 51(1)(e)(iii) of the PFMA. This was due to proper and complete records that were not maintained as evidence to support the investigations into irregular expenditure.

Revenue management

70. Effective and appropriate steps were not taken to collect all revenue due, as required by section 51(1)(b)(i) of the PFMA.

OTHER INFORMATION

71. 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 71 of 2008 (Companies Act). The other information does not include the consolidated and separate financial statements, the auditor's report and those selected programmes presented in the annual performance report that have been specifically reported in this auditor's report.

72. My 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 on it.

Auditors Report

73. 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 programmes presented in the annual performance report, or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

74. As a result of the disclaimer of opinion expressed on the consolidated and separate financial statements, I do not conclude on material misstatements of the other information relating to the consolidated and separate financial statements. If, based on the work I have performed relating to the audit of performance information and compliance with legislation, 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

75. 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.

76. Senior Management did not develop action plans to address prior year findings, as result repeat findings were reported in the current year on the annual financial statements, annual performance report and compliance with legislation.

77. The accounting authority and senior management did not exercise adequate oversight responsibility regarding financial reporting, performance reporting and compliance with laws and regulations and related internal controls, and consequently the following significant internal control deficiencies were identified:

- Inadequate record keeping, which resulted in limitations of scope.
- A weakened control environment and a tone at the top that does not promote a culture of excellence, performance management, accountability and consequence management.

78. Management did not ensure that effective internal controls are in place for the preparation of accurate annual financial statements and a performance report that were supported by reliable evidence, resulting in a disclaimed audit opinion on the financial statements, material findings on the annual performance report as well as instances of non-compliance with legislation.

Auditor -General

Johannesburg

08 October 2021

AUDITOR-GENERAL
SOUTH AFRICA

Auditing to build public confidence

Consolidated and Separate Statement of Financial Position as at 31 March 2021

		Group			Company		
	Note(s)	2021	2020	2019	2021	2020	2019
			Restated *	Restated *		Restated *	Restated *
		R'000	R'000	R'000	R'000	R'000	R'000
Assets							
Non-Current Assets							
Property, plant and equipment	4	1,408,735	1,353,101	1,393,976	1,094,235	1,037,434	1,082,095
Right-of-use assets	17	8,978	10,367	-	7,520	9,357	-
Goodwill		16,584	16,584	16,584	-	-	
Intangible assets	5	21,108	27,510	31,728	689	1,493	-
Investments in subsidiaries	6	-	-	-	220,701	220,701	220,701
Investments in associates	7	7,198	4,927	4,333	2	2	2
Loans to group companies	8	-	-	-	-	84,709	50,351
Other financial assets	9	265,203	219,226	197,259	265,174	219,201	197,223
Retirement benefit asset	18	9,229	4,903	10,562	9,229	4,903	10,562
Deferred tax	10	169,835	171,520	134,960	-	-	-
Decommissioning and Decontamination of Stage 1	41	3,411,338	2,901,145	3,330,790	3,411,338	2,901,145	3,330,790
Decommissioning and Decontamination of Stage 2	41	145,764	114,132	153,979	145,764	114,132	153,979
Vaalputs After Care	42	23,582	24,318	25,055	23,582	24,318	25,055
		5,487,554	**4,847,733**	**5,299,226**	**5,178,234**	**4,617,395**	**5,070,758**
Current Assets							
Inventories	11	372,110	364,863	307,770	53,494	65,187	41,389
Loans to group companies	8	-	-	-	-	72	-
Trade and other receivables	12	378,928	319,384	628,836	183,348	59,634	97,504
Other financial assets	9	461,950	337,338	313,813	457,781	335,380	312,074
Prepayments		57,439	2,400	7,821	46,466	194	6,033
Current tax receivable		10,878	12,917	15,429		-	
Cash and cash equivalents	13	169,734	202,910	374,800	21,151	16,630	21,834
		1,451,039	1,239,812	1,648,469	762,240	477,097	478,834
Disposal group assets	14	**716**	**180**	**3,448**	**-**	**-**	**-**
Total Assets		**6,939,309**	**6,087,725**	**6,951,143**	**5,940,474**	**5,094,492**	**5,549,592**
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		739,256	624,675	610,044	716,104	602,756	594,614
Accumulated loss		(196,043)	143,767	355,202	(767,549)	(533,275)	(380,293)
		545,418	770,647	967,451	(49,240)	71,686	216,526
Non-controlling interest		**62,563**	**58,724**	**55,076**	**-**	**-**	**-**
		607,981	**829,371**	**1,022,527**	**(49,240)**	**71,686**	**216,526**

* Figures restated - refer to note 38

Consolidated and Separate Statement of Financial Position as at 31 March 2021

	Note(s)	Group			Company		
		2021	2020	2019	2021	2020	2019
			Restated *	Restated *		Restated *	Restated *
		R'000	R'000	R'000	R'000	R'000	R'000
Liabilities							
Non-Current Liabilities							
Vaalputs After Care	42	50,203	46,592	43,241	50,203	46,592	43,241
Other financial liabilities	16	-	2,319	4,408	-	-	-
Leases and Right-of-use assets	17	2,646	2,163	3,819	888	1,841	1,385
Retirement benefit obligation	18	297,469	270,281	326,885	271,699	249,741	301,608
Deferred income	19	608,634	583,999	539,976	608,634	583,999	539,976
Deferred tax	10	49,298	45,375	35,538	-	-	-
Provisions	20	712,182	594,770	583,795	591,489	502,932	464,373
Investment contributions for future liabilities	43	58,749	45,930	42,705	58,749	45,930	42,705
Decommissioning and Decontamination of Stage 1	41	3,411,338	2,901,145	3,330,790	3,411,338	2,901,145	3,330,790
Decommissioning and Decontamination of Stage 2	41	145,764	114,132	153,979	145,764	114,132	153,979
		5,336,283	**4,606,706**	**5,065,136**	**5,138,764**	**4,446,312**	**4,878,057**
Current Liabilities							
Trade and other payables	21	259,281	224,850	539,368	132,030	136,614	65,572
Loans from group companies	8	-	-	-	49,106	46,223	42,533
Other financial liabilities	16	12,944	14,234	1,963	10,895	83	1,118
Leases and Right-of-use assets	17	1,704	3,967	3,070	2,169	3,411	1,840
Retirement benefit obligation	18	25,205	25,128	23,795	23,915	24,082	23,795
Deferred income	19	276,421	125,940	23,442	276,421	125,940	23,442
Current tax payable		1,377	-	-	-	-	-
Provisions	20	133,957	76,074	72,625	86,313	51,485	48,569
Amounts Received in Advance		270,101	157,430	152,963	270,101	188,468	228,140
Bank overdraft	13	14,004	23,909	45,959	-	188	20,000
		994,994	651,532	863,185	850,950	576,494	455,009
Disposal group liabilities	14	51	116	295	-	-	-
Total Liabilities		**6,331,328**	**5,258,354**	**5,928,616**	**5,989,714**	**5,022,806**	**5,333,066**
Total Equity and Liabilities		**6,939,309**	**6,087,725**	**6,951,143**	**5,940,474**	**5,094,492**	**5,549,592**

* Figures restated - refer to note 38

Consolidated and Separate Statement of Comprehensive Income for the year ended 31 March 2021

	Note(s)	Group			Company		
		2021	2020	2019	2021	2020	2019
			Restated *	Restated *		Restated *	Restated *
		R'000	R'000	R'000	R'000	R'000	R'000
Continuing operations							
Revenue	26	1,675,835	1,792,582	2,150,357	1,050,791	1,136,321	1,072,370
Cost of sales	46	(576,217)	(800,221)	(1,503,147)	(182,565)	(311,835)	(261,879)
Gross profit		**1,099,618**	**992,361**	**647,210**	**868,226**	**824,486**	**810,491**
Other income		42,198	56,486	152,165	10,834	18,281	23,310
Expected credit loss trade receivables	12	30,674	(57,352)	122,501	28,452	(105,828)	(62,627)
Other operating expenses		(1,266,965)	(1,062,798)	(1,129,218)	(1,022,277)	(826,446)	(888,629)
Government Grant Income (Decommissioning and Decontamination Stage 1)	41	352,013	(698,620)	(315,495)	352,013	(698,620)	(315,495)
Acceptance of Decommission and Decontamination Stage 1	41	(352,013)	698,620	315,495	(352,013)	698,620	315,495
Administration and fees		(268,126)	(245,810)	(127,283)	(147,460)	(137,826)	(133,097)
Operating loss	**27**	**(362,601)**	**(317,113)**	**(334,625)**	**(262,225)**	**(227,333)**	**(250,552)**
Investment income	28	233,923	282,387	291,489	224,078	268,801	261,860
Fair value adjustments		19,124	(7,010)	10,042	19,124	(7,010)	10,042
Finance costs	29	(192,968)	(236,467)	(153,995)	(193,460)	(233,360)	(146,040)
Income from equity accounted investments		2,539	627	514	-	-	-
Loss before taxation		**(299,983)**	**(277,576)**	**(186,575)**	**(212,483)**	**(198,902)**	**(124,690)**
Taxation	30	(11,890)	26,114	64,773	-	-	-
Loss from continuing operations		**(311,873)**	**(251,462)**	**(121,802)**	**(212,483)**	**(198,902)**	**(124,690)**
Discontinued operations							
Loss from discontinued operations	14	(66)	(5)	(1,168)	-	-	-
Loss for the year		**(311,939)**	**(251,467)**	**(122,970)**	**(212,483)**	**(198,902)**	**(124,690)**
Other comprehensive income:							
Items that will not be reclassified to profit or loss:							
Re-measurements on net defined benefit liability/asset		(19,199)	52,985	45,436	(21,791)	45,921	37,926
Gains on property revaluation		113,279	8,890	67,540	113,207	8,602	66,172
Fair value adjustment on financial assets		471	(11)	(6)	-	-	-
Income tax relating to items that will not be reclassified		(1,532)	(1,263)	(1,365)	-	-	-
Total items that will not be reclassified to profit or loss		**93,019**	**60,601**	**111,605**	**91,416**	**54,523**	**104,098**
Items that may be reclassified to profit or loss:							
Exchange differences on translating foreign operations		(373)	417	(1,051)	-	-	-
Fair value through other comprehensive income adjustments		141	(460)	(47)	141	(460)	(47)

Consolidated and Separate Statement of Comprehensive Income for the year ended 31 March 2021

Total items that may be reclassified to profit or loss		**(232)**	**(43)**	**(1,098)**	**141**	**(460)**	**(47)**
Other comprehensive income for the year net of taxation	**31**	**92,787**	**60,558**	**110,507**	**91,557**	**54,063**	**104,051**
Total comprehensive loss for the year		**(219,152)**	**(190,909)**	**(12,463)**	**(120,926)**	**(144,839)**	**(20,639)**
Loss attributable to:							
Owners of the parent		(316,954)	(255,970)	(126,454)	(212,483)	(198,902)	(124,690)
Non-controlling interest		5,015	4,503	3,484	-	-	-
		(311,939)	**(251,467)**	**(122,970)**	**(212,483)**	**(198,902)**	**(124,690)**
Total comprehensive loss attributable to:							
Owners of the parent		(223,999)	(195,600)	(18,585)	(120,926)	(144,839)	(20,639)
Non-controlling interest		4,847	4,691	6,122	-	-	-
		(219,152)	**(190,909)**	**(12,463)**	**(120,926)**	**(144,839)**	**(20,639)**

* Figures restated - refer to note 38

Consolidated and Separate Statement of Changes in Equity for the year ended 31 March 2021

	Share capital	Foreign currency translation reserve	Revaluation reserve	Fair value through other comprehensive income reserve	Reserve for valuation of liabilities	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	R'000
Group										
Opening balance as previously reported	2,205	(1,799)	606,166	12,742	-	617,109	69,487	688,801	62,279	751,080
Prior period error (Note 38) Prior year adjustments	-	-	-	(12,077)	5,012	(7,065)	285,715	278,650	(7,203)	271,447
Restated* Balance at 01 April 2019	**2,205**	**(1,799)**	**606,166**	**665**	**5,012**	**610,044**	**355,202**	**965,246**	**55,076**	**1,020,322**
Total comprehensive income for the year as previously reported	-	417	288	3,803	-	4,508	(85,592)	(81,084)	(4,788)	(85,872)
Prior period error	-	-	8,602	(4,272)	5,799	10,129	(124,646)	(114,517)	9,479	(105,038)
Total comprehensive Loss for the year *restated	**-**	**417**	**8,890**	**(469)**	**5,799**	**14,637**	**(210,238)**	**(195,601)**	**4,691**	**(190,910)**
Prior year Goodwill restatement as previously stated	-	-	-	-	-	-	14,044	14,044	-	14,044
Prior period error	-	-	-	-	-	-	(14,044)	(14,044)		(14,044)
Restated Prior year goodwill	-	-	-	-	-	-	-	-	-	-
Other movement as previously reported	-	-	-	-	-	-	144,598	144,598	11,242	155,840
Other movement Prior period error	-	-	-	-	-	-	(144,598)	(144,598)	(11,242)	(155,840)
Restated Other movement	-	-	-	-	-	-	-	-	-	-
Dividends paid	-	-	-	-	-	-	(24,548)	(24,548)	-	(24,548)
Dividend Prior period error	-	-	-	-	-	-	23,351	23,351	(1,042)	22,309
Restated Dividends	-	-	-	-	-	-	(1,197)	(1,197)	(1,042)	(2,239)
Total changes	**-**	**417**	**8,890**	**(469)**	**5,799**	**14,637**	**(211,435)**	**(196,798)**	**3,649**	**(193,149)**
Note(s)	15		24&31	25						

* Figures restated - refer to note 38

Consolidated and Separate Statement of Changes in Equity for the year ended 31 March 2021

	Share capital	Foreign currency translation reserve	Revaluation reserve	Fair value through other comprehensive income reserve	Reserve for valuation of liabilities	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	R'000
Opening balance as previously reported	2,205	(1,382)	606,454	16,545	-	621,617	117,989	741,811	68,732	810,543
Adjustments										
Prior period errors	-	-	8,602	(16,349)	10,811	3,064	25,778	28,842	(10,008)	18,834
Balance at 31 March 2020	**2,205**	**(1,382)**	**615,056**	**196**	**10,811**	**624,681**	**143,767**	**770,653**	**58,724**	**829,377**
Other comprehensive income	-	(373)	113,279	613	1,059	114,578	(21,623)	92,955	4,847	97,802
Profit/(loss) for the year	-	-	-	-	-	-	(316,954)	(316,954)	-	(316,954)
Dividends paid	-	-	-	-	-	-	(1,233)	(1,233)	(1,009)	(2,242)
Total changes	**-**	**(373)**	**113,279**	**613**	**1,059**	**114,578**	**(339,810)**	**(225,232)**	**3,838**	**(221,394)**
Balance at 31 March 2021	**2,205**	**(1,755)**	**728,335**	**809**	**11,870**	**739,259**	**(196,043)**	**545,421**	**62,563**	**607,984**
Note(s)	15		24&31	25						

* Figures restated - refer to note 38

Consolidated and Separate Statement of Changes in Equity for the year ended 31 March 2021

	Share capital	Foreign currency translation reserve	Revaluation reserve	Fair value through other comprehensive income reserve	Reserve for valuation of liabilities	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	R'000
Company										
Opening balance as previously reported	2,205	-	593,963	7,717	-	601,680	(471,406)	132,479	-	132,479
Adjustments										
Prior period error	-	-	-	(7,066)	-	(7,066)	91,113	84,047	-	84,047
Restated* Balance at 01 April 2019 as restated	**2,205**	**-**	**593,963**	**651**	**-**	**594,614**	**(380,293)**	**216,526**	**-**	**216,526**
Total comprehensive income for the year as previously reported	-	-	8,602	(560)	-	8,042	(143,760)	(135,718)	-	(135,718)
Adjustments to correct Prior period errors	-	-	-	100	-	100	(9,222)	(9,122)	-	(9,122)
Total comprehensive income for the year *Restated	**-**	**-**	**8,602**	**(460)**	**-**	**8,142**	**(152,982)**	**(144,840)**	**-**	**(144,840)**
Opening balance as previously reported	2,205	-	593,963	7,157	-	601,120	(615,166)	(11,841)	-	(11,841)
Adjustments										
Prior period errors	-	-	8,602	(6,966)	-	1,636	81,891	83,527	-	83,527
Balance at 31 March 2020	**2,205**	**-**	**602,565**	**191**	**-**	**602,756**	**(533,275)**	**71,686**	**-**	**71,686**
Other comprehensive income	-	-	113,207	141	-	113,348	(32,567)	80,781	-	80,781
Profit/(loss) for the year	-	-	-	-	-		(212,483)	(212,483)	-	(212,483)
Total comprehensive income and profit(loss) for the year	**-**	**-**	**113,207**	**141**	**-**	**113,348**	**(234,274)**	**(120,926)**	**-**	**(120,926)**
Balance at 31 March 2021	**2,205**	**-**	**715,772**	**332**	**-**	**716,104**	**(767,549)**	**(49,240)**	**-**	**(49,240)**
Note(s)	15		24&31							

* Figures restated - refer to note 38

Consolidated and Separate Statement of Cash Flows for the year ended 31 March 2021

	Note(s)	Group			Company		
		2021	2020	2019	2021	2020	2019
			Restated *	Restated *		Restated *	Restated *
		R'000	R'000	R'000	R'000	R'000	R'000
Cash flows from operating activities							
Cash receipts from customers		1,790,552	2,123,749	2,024,634	1,021,855	1,148,285	1,697,566
Cash paid to suppliers and employees		(1,829,274)	(2,340,074)	(2,371,457)	(1,164,536)	(1,216,913)	(1,807,987)
Cash generated from (used in) operations	32	(38,721)	(216,325)	(346,823)	(142,680)	(68,629)	(110,421)
Interest income		43,154	51,770	75,839	33,882	39,128	27,782
Finance costs		(1,303)	(6,255)	(11,432)	(1,998)	(3,723)	(4,844)
Dividends paid		956	1,344	1,303	383	546	20,489
Tax (paid) received	33	(2,866)	1,903	(5,038)	-	-	-
Cash flows from discontinued operations		(66)	(5)	(1,168)	-	-	-
Net cash from operating activities		**1,154**	**(167,568)**	**(287,319)**	**(110,413)**	**(32,678)**	**(66,994)**
Cash flows from investing activities							
Purchase of property, plant and equipment	4	(38,398)	(48,012)	(51,029)	(18,574)	(20,110)	(32,143)
Proceeds from sale of property, plant and equipment	4	537	290	885	-	-	-
Proceeds / (Purchase) of other intangible assets	5	(176)	(1,607)	(211)	133	(1,493)	-
Movement in financial assets		(151,225)	(52,554)	270,421	(149,109)	(44,083)	224,085
Loan to group companies		-	-	-	84,781	(34,430)	(48,836)
Net cash from investing activities		**(189,262)**	**(101,883)**	**220,066**	**(82,769)**	**(100,116)**	**143,106**
Cash flows from financing activities							
Change in loans from group companies		-	-	-	2,883	3,690	(16,548)
Other financial liabilities		(3,615)	10,182	(7,480)	10,812	(1,035)	(4,831)
Movement in investment contributions for future liabilities		12,819	3,225	5,012	12,819	3,225	5,012
Movement in deferred Grant Income	19	175,116	146,521	(16,529)	175,116	146,521	(16,529)
Dividends paid		(2,242)	(2,239)	(5,005)		-	
Lease payments		(4,400)	(25,886)	3,427	(3,739)	(4,809)	(1,776)
Short-term and low value lease payments		(12,841)	(12,192)	(59,024)	-	(190)	(49,428)
Net cash from financing activities		**164,837**	**119,611**	**(79,599)**	**197,891**	**147,402**	**(84,100)**
Total cash movement for the year		**(23,271)**	**(149,840)**	**(146,852)**	**4,709**	**14,608**	**(7,988)**
Cash at the beginning of the year		179,001	328,841	475,693	16,442	1,834	9,822
Total cash at end of the year	**13**	**155,730**	**179,001**	**328,841**	**21,151**	**16,442**	**1,834**

* Figures restated - refer to note 38

Significant Accounting Policies

The principal accounting policies applied in the preparation of these financial statements are set out below.

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 2021, together with the comparative period data as at and for the year ended 31 March 2020, 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 IFRS 16, 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.

These financial statements were submitted by the Board of directors on 30 June 2021 for auditing.

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.

Significant 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.

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.

Significant Accounting Policies

1.3 Property, plant and equipment (continued)

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 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.

Plant utilisation at the Group was not impacted by the lockdown regulations implemented in South Africa due to the unique nature of its operations. As the Group's operations were classified as essential services, the implementation of lockdowns was not considered to be an indicator for impairment. Additionally, as the Group's major customers are medical companies that rely mainly on the Group for goods and services, the COVID-19 implications were minimal at the reporting date.

Significant Accounting Policies

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
- 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 Annual 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.

Significant Accounting Policies

1.6 Investments in associates

Company Annual Financial Statements

An investment in an associate is carried at cost less any accumulated impairment.

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 45 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.

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

They are subsequently measured at amortised cost.

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 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).

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 45).

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 include in the financial instruments and risk management (note 45).

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).

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (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 a 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). 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 45).

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.

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.

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

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 45).

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 a 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).

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management (note 45).

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.

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

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 45).

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.

Investments in equity instruments

Classification

Investments in equity instruments are presented in note . 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). 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 45).

Impairment

Investments in equity instruments are not subject to impairment provisions.

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.

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

The Group holds investments in debentures and corporate bonds (note 9) 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 9) 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). 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 45).

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 interests 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.

Fair value gains or losses are included in other operating gains (losses) (note). 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)

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

Borrowings expose the Group to liquidity risk and interest rate risk. Refer to note 45 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).

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 45).

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 45 for details of risk exposure and management thereof.

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 16).

Details of foreign currency risk exposure and the management thereof are provided in the financial instruments and risk management note (note 45).

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.

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

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).

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 45).

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.

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 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.

Bank overdrafts

Bank overdrafts are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Significant Accounting Policies

1.7 Financial instruments - IFRS 9 (continued)

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.

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.

1.8 Leases - IFRS 16

The company assesses whether a contract is, or contains a lease, at the inception of the contract.

A contract is, or contains a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

In order to assess whether a contract is, or contains a lease, management determine whether the asset under consideration is "identified", which means that the asset is either explicitly or implicitly specified in the contract and that the supplier does not have a substantial right of substitution throughout the period of use. Once management has concluded that the contract deals with an identified asset, the right to control the use thereof is considered. To this end, control over the use of an identified asset only exists when the company has the right to substantially all of the economic benefits from the use of the asset as well as the right to direct the use of the asset.

In circumstances where the determination of whether the contract is or contains a lease requires significant judgement, the relevant disclosures are provided in the significant judgments and sources of estimation uncertainty section of these accounting policies.

Company as lessee

A lease liability and corresponding right-of-use asset are recognised at the lease commencement date, for all lease agreements for which the company is a lessee.

The various lease and non-lease components of contracts containing leases are accounted for separately, with consideration being allocated to each lease component on the basis of the relative stand-alone prices of the lease components and the aggregate stand-alone price of the non-lease components (where non-lease components exist).

However as an exception to the preceding paragraph, the company has elected not to separate the non-lease components for leases of land and buildings.

Details of leasing arrangements where the company is a lessee are presented in note 17 Leases (company as lessee).

Significant Accounting Policies

1.8 Leases - IFRS 16 (continued)

Lease liability

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted by using the rate implicit in the lease. If this rate cannot be readily determined, the company uses its incremental borrowing rate.

Lease payments included in the measurement of the lease liability comprise the following:

- fixed lease payments, including in-substance fixed payments, less any lease incentives;
- variable lease payments that depend on an index or rate, initially measured using the index or rate at the commencement date;
- the amount expected to be payable by the company under residual value guarantees;
- the exercise price of purchase options, if the company is reasonably certain to exercise the option;
- lease payments in an optional renewal period if the company is reasonably certain to exercise an extension option; and
- penalties for early termination of a lease, if the lease term reflects the exercise of an option to terminate the lease.

Variable rents that do not depend on an index or rate are not included in the measurement of the lease liability (or right-of-use asset). The related payments are recognised as an expense in the period incurred and are included in operating expenses (note 27).

The lease liability is presented as a separate line item on the Statement of Financial Position.

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability (using the effective interest method) and by reducing the carrying amount to reflect lease payments made. Interest charged on the lease liability is included in interest expense (note 17).

The company remeasures the lease liability (and makes a corresponding adjustment to the related right-of-use asset) when:

there has been a change to the lease term, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate;

- there has been a change in the assessment of whether the company will exercise a purchase, termination or extension option, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate;
- there has been a change to the lease payments due to a change in an index or a rate, in which case the lease liability is remeasured by discounting the revised lease payments using the initial discount rate (unless the lease payments change is due to a change in a floating interest rate, in which case a revised discount rate is used);
- there has been a change in expected payment under a residual value guarantee, in which case the lease liability is remeasured by discounting the revised lease payments using the initial discount rate;
- a lease contract has been modified and the lease modification is not accounted for as a separate lease, in which case the lease liability is remeasured by discounting the revised payments using a revised discount rate.

When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recognised in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

Right of use assets

Right-of-use assets are presented as a separate line item on the Statement of Financial Position.

Lease payments included in the measurement of the lease liability comprise the following:

- the initial amount of the corresponding lease liability;
- any lease payments made at or before the commencement date;
- any initial direct costs incurred;
- any estimated costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, when the company incurs an obligation to do so, unless these costs are incurred to produce inventories; and
- less any lease incentives received.

Right-of-use assets are subsequently measured at cost less accumulated depreciation and impairment losses.

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset.

The residual value, useful life and depreciation method of each asset are reviewed at the end of each reporting year. If the expectations differ from previous estimates, the change is accounted for prospectively as a change in accounting estimate. Each part of a right-of-use asset with a cost that is significant in relation to the total cost of the asset is depreciated separately.

Significant Accounting Policies

1.8 Leases - IFRS 16 (continued)

The depreciation charge for each year is recognised in profit or loss unless it is included in the carrying amount of another asset.

Company as lessor

Leases for which the company is a lessor are classified as finance or operating leases. Whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee, the contract is classified as a finance lease. All other leases are classified as operating leases.

Lease classification is made at inception and is only reassessed if there is a lease modification.

When the company is an intermediate lessor, it accounts for the head lease and the sublease as two separate contracts. The sublease is classified as a finance or operating lease by reference to the right-of-use asset arising from the head lease. If the head lease is a short- term lease to which the company applies the exemption described previously, then it classifies the sub-lease as an operating lease.

The various lease and non-lease components of contracts containing leases are accounted for separately, with consideration being allocated by applying IFRS 15.

Finance leases

Amounts due from lessees are recognised from commencement date at an amount equal to the company net investment in the lease. They are presented as lease receivables (note 17) on the statement of financial position.

The interest rate implicit in the lease is used to measure the net investment in the lease. If the interest rate implicit in a sublease cannot be readily determined for a sublease, then the discount rate used for the head lease (adjusted for any initial direct costs associated with the sublease) is used to measure the net investment in the sublease.

Modifications made to operating leases are accounted for as a new lease from the effective date of the modification. Any prepaid or accrued lease payments relating to the original lease are treated as part of the lease payments of the new lease.

The interest rate implicit in the lease is defined in a manner which causes the initial direct costs to be included in the initial measurement of the net investment in the lease.

Lease payments included in the measurement of the net investment in the lease comprise the following:

- fixed lease payments, including in-substance fixed payments, less any lease incentives payable;
- variable lease payments that depend on an index or rate, initially measured using the index or rate at the commencement date;
- the amount expected to be receivable by the company from the lessee, a party related to the lessee or a third party unrelated to the company under residual value guarantees (to the extent of third parties, this amount is only included if the party is financially capable of discharging the obligations under the guarantee);
- the exercise price of purchase options, if the lessee is reasonably certain to exercise the option;
- penalties for early termination of a lease, if the lease term reflects the exercise of an option to terminate the lease.

The company recognises finance income over the lease term, based on a pattern that reflects a constant periodic rate of return on the net investment in the lease. Finance income recognised on finance leases is included in investment income in profit or loss (note 29).

The company applies the impairment provisions of IFRS 9 to lease receivables. Refer to the accounting policy for trade and other receivables as lease receivables are impaired on a consistent basis with that accounting policy.

Leases (Comparatives under IAS 17)

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.

Significant Accounting Policies

1.8 Leases - IFRS 16 (continued)

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

Short-term and low value 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 a short-term and low value lease asset. This liability is not discounted.

In the event that lease incentives are received to enter into short-term and low value 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.

1.9 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.

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.

1.10 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.

Significant Accounting Policies

1.11 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.

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.

1.12 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.

1.13 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.

Significant Accounting Policies

1.13 Employee benefits (continued)

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.

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.

1.14 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.

Significant Accounting Policies

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.

1.15 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.

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.

1.16 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 Group 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.

Significant Accounting Policies

1.16 Revenue (continued)

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.

Interest Income

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.

1.17 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.

1.18 Translation of foreign currencies

Functional and presentation currency

Items included in the Annual 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 Annual Financial Statements are presented in Rand which is the Group functional and presentation currency.

Significant Accounting Policies

1.18 Translation of foreign currencies (continued)

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:

- 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 Annual 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.

1.19 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 Acting 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.

1.20 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.

Significant Accounting Policies

1.20 Fruitless and wasteful, irregular and unauthorised expenditure (continued)

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.

1.21 Borrowing costs

Borrowing costs that are directly attributable to the acquisition, construction or production of a qualifying asset which are assets that necessarily take a substantial period of time to get ready for their intended use or sale are capitalised as part of the cost of that asset until such time as the asset is ready for its intended use. The amount of borrowing costs eligible for capitalisation is determined as follows:

- Actual borrowing costs on funds specifically borrowed for the purpose of obtaining a qualifying asset less any temporary investment of those borrowings.
- Weighted average of the borrowing costs applicable to the entity on funds generally borrowed for the purpose of obtaining a qualifying asset. The borrowing costs capitalised do not exceed the total borrowing costs incurred.

The capitalisation of borrowing costs commences when:

- expenditures for the asset have occurred;
- borrowing costs have been incurred; and
- activities that are necessary to prepare the asset for its intended use or sale are in progress.

Capitalisation is suspended during extended periods in which active development is interrupted.

Capitalisation ceases when substantially all the activities necessary to prepare the qualifying asset for its intended use or sale are complete. All other borrowing costs are recognised as an expense in the period in which they are incurred.

1.22 Rounding

Unless otherwise stated all financial figures are rounded off to the nearest one thousand Rands (R'000).

Notes to the Annual 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 90 days, as well as observable changes in national or local economic conditions that correlate with default on receivables.

Classification of Buildings Rented out

The buildings are all located on the Necsa premises and due to the security requirements related to the nuclear activities of Necsa, these buildings cannot be sold separately and has to be kept by Necsa as part of fulfilling its nuclear responsibilities. The purpose with which the buildings are held is therefore solely connected to Necsa's main nuclear business and the buildings are not held for the purpose of capital appreciation, nor is it held to earn rentals. When buildings are vacant and when there is a tenant to which a vacant building can be leased, vacant buildings are leased out. The leasing activity is incidental to the purpose for which the buildings are held and the buildings are not held for the purpose of leasing them out. Vacant buildings that are leased out are therefore classified as property, plant and equipment.

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.

Notes to the Annual Financial Statements

2. SIGNIFICANT JUDGEMENTS AND SOURCES OF ESTIMATION UNCERTAINTY (CONTINUED)

Provisions

Provisions are estimated by management based on the available information. Additional disclosure of these estimates are included in note 20 - Provisions.

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.

Lease classification

Lessors

The company is party to leasing arrangements, as a lessor. The treatment of leasing transactions in the annual financial statements is mainly determined by whether the lease is considered to be an operating lease or a finance lease. In making this assessment, management considers the substance of the lease, as well as the legal form, and makes a judgement about whether substantially all of the risks and rewards of ownership are transferred.

Significant judgement was applied by management in concluding the correct lease classification. Management therefore determines whether or not the lease should be classified as an operating or finance lease.

Notes to the Annual Financial Statements

2. SIGNIFICANT JUDGEMENTS AND SOURCES OF ESTIMATION UNCERTAINTY (CONTINUED)

Lessees

IFRS 16 estimation and uncertainty:

- calculating discount rate
- estimating lease term
- estimating variable lease payments dependent on index or rate

Other IFRS 16 judgements:

- judgement in identifying whether a contract includes a lease.
- establishing whether or not it is reasonably certain that an extension option will be exercised
- considering whether or not it is reasonably certain that a termination option will not be exercised
- determining whether or not variable lease payments are truly variable or in substance fixed

Critical judgements in determining the lease term

In determining the lease term, management considers all facts and circumstances that create an economic incentive to exercise an extension option: or not exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

The assessment is reviewed if a significant event or a significant change in circumstances occurs which affects this assessment and that is within the control of the lessee. During the current financial year, the financial effect of revising lease terms to reflect the effect of exercising extension and termination options was an increase in recognised lease liabilities and right-of-use assets of R94million

Impact of COVID-19

COVID-19 was declared a global pandemic in March 2020. The note below describes the impact on the Group's local and international operations.

During March 2020, the first case of COVID-19 was reported in South Africa. In response, the South African government enforced a 21-day lockdown beginning Friday, 27 March 2020 and later extended it for a further 14 days ended Thursday, 30 April 2020.

Locally, certain restrictions on economic activities and movement were lifted from 1 May 2020. Similar announcements easing restrictions in other countries were made as the governments of those countries introduced measures to revive their economies. The relaxation of restrictions has enabled the Group to ramp up existing operations provided that strict health and safety guidelines mandated by the government is adhered to.

The Group's prior financial year concluded on 31 March 2020, three weeks after the World Health Organization recognised COVID-19 as a global pandemic and a few days after lockdown restrictions were implemented in South Africa. The impact of COVID-19 has ,however, not been recognised as an adjusting subsequent event in preparing these financial statements as it did not impact materially on the Group's performance. While every effort has been made to quantify the future impact that the virus will have on the business, there is a lot of uncertainty on how the pandemic will eventually fold out.

Business interruption

The Group supplies critical products and services to the medical industry. The Group's products are key inputs for medical and similar service providers. As such, the products are classified as essential services. The COVID-19 impact on the Group's business operations was minimal at financial year end.

The Group's management of the COVID-19 crisis

As the business operates mainly in South Africa, the response to the COVID-19 crisis has been guided by the national authorities and international guidelines issued by the World Health Organization. The Group is working under strict conditions, across all its operations, to limit and minimise the potential for COVID-19 transmission, and will continue to support and educate employees on the appropriate hygiene standards to follow. The Group continues to prioritise the health and safety of all employees and, where possible, has arranged for many employees to work remotely.

The extent of the effect of COVID-19 on business operations is continually being reassessed, with business continuity plans being prepared and executed to deal with anticipated outcomes. Additionally, the Group's internal policies and risk management practices are continuously being updated to ensure that they remain aligned to the rapidly evolving situation.

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Notes to the Annual Financial Statements

2. SIGNIFICANT JUDGEMENTS AND SOURCES OF ESTIMATION UNCERTAINTY (CONTINUED)

Impact on the annual financial statements

The Group has assessed the impact of COVID-19 on the Annual Financial Statements.

Necsa's business model leverages Necsa's knowledge base, legacy infrastructure investment, and on-going research and development in the fulfilment of the State's nuclear obligations as well as the pursuit of commercial ventures in addition to its other business model objectives. However, due to the limited impact of the COVID-19 pandemic at the Group's financial year end, the results of the Group did not include any adjusting events.

Impairment of financial assets

The Group assesses impairment of financial assets by calculating the expected credit loss allowance on trade and other receivables. Forward-looking information included the market impact of COVID-19 by adjusting the credit risk of receivables for macro -economic conditions that impact credit risk. As the Group operates in a niche market with a reliable customer base, the impact was not significant to warrant any significant adjustments to financial assets.

Inventory obsolescence

The Group's inventory is continuously considered for obsolescence due to the nature of the group's business. The amount of any write-down of inventories to net realizable value and losses of inventories are recognised as an expense in the period the write-down or loss occurs. Hence, the COVID-19's impact on inventory valuations was minimal.

Cash flows and liquidity

The Group assessed the impact of the lockdown on the cash resources on hand and available from committed facilities together with the possibility of default by customers. The Group is prioritising its spending with a focus on reducing non-essential costs and making operations more efficient. The Group is further committed to minimising the impact on salaries and job losses.

The Group's liquidity and access to facilities is continuously monitored to ensure that sufficient funds are available to meet the group's commitments. The Group has overdraft facilities with local banks and other funding institutions. In addition, the company can rely on financial support from its shareholder should the need arise.

Notes to the Annual Financial Statements

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:

Title of the IFRS	Nature of the change in accounting policy	Impact on the amounts recognised in the current and prior periods
IFRS 9 Financial Instruments	Interest Rate Benchmark Reform	No material impact expected.
IAS 39 Financial Instruments: Recognition and Measurement	Interest Rate Benchmark Reform	No material impact expected.
IFRS 7 Financial Instruments: Disclosures	Interest Rate Benchmark Reform	No material impact expected.

3.2 Standards and interpretations not yet effective

The following standards and interpretations have been issued but is not yet effective and further information about whether they have been applied and known or reasonably estimable information relevant to assessing their possible impact on the financial statements in the period of initial application is provided below:

Title of the IFRS	Whether it was applied in the current year AFS	Nature of the impending change or changes in accounting policy	Application of the IFRS is required for periods beginning on or after	Initial application of the IFRS is planned for the financial year beginning on	Expected impact of the initial application on the financial statements
IFRS 1 First-time Adoption of International Financial Reporting Standards	Not applied	Subsidiary as a First- time Adopter	1 January 2022	1 April 2022	No material impact expected.
IFRS 9 Financial Instruments	Not applied	Fees in the '10 per cent' Test for Derecognition of Financial Liabilities	1 January 2022	1 April 2022	No material impact expected.
Illustrative Examples accompanying IFRS 16 Leases	Not applied	Lease Incentives	May 2020	1 April 2021	No material impact expected.
IAS 41 Agriculture	Not applied	Taxation in Fair Value Measurements	1 January 2022	1 April 2022	No material impact expected.
IAS 37 Provisions, Contingent Liabilities and Contingent Assets	Not applied	Onerous Contracts—Cost of Fulfilling a Contract	1 January 2022	1 April 2022	No material impact expected.
IAS 1 Presentation of Financial Statements	Not applied	Classification of Liabilities as Current or Non-current	1 January 2023	1 April 2023	No material impact expected.
IFRS 16 Leases	Not applied	COVID-19-Related Rent Concessions	1 June 2020	1 April 2021	No material impact expected.
IFRS 17 Insurance Contracts	Not applied	Various amendments	1 January 2023	1 April 2023	No material impact expected.
IFRS 4 Insurance Contracts	Not applied	Extension of the Temporary Exemption from Applying IFRS 9	1 January 2023	1 April 2023	No material impact expected.
IFRS 9 Financial Instruments	Not applied	Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IAS 39 Financial Instruments: Recognition and Measurement	Not applied	Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IFRS 7 Financial Instruments: Disclosures	Not applied	Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.

Notes to the Annual Financial Statements

3.2 Standards and interpretations not yet effective (continued)

Title of the IFRS	Whether it was applied in the current year AFS	Nature of the impending change or changes in accounting policy	Application of the IFRS is required for periods beginning on or after	Initial application of the IFRS is planned for the financial year beginning on	Expected impact of the initial application on the financial statements
IFRS 4 Insurance Contracts	Not applied	Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IFRS 16 Leases	Not applied	Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IAS 16 Property, Plant and Equipment	Not applied	Proceeds before Intended Use	1 January 2022	1 April 2022	No material impact expected.
IFRS 17 Insurance Contracts	Not applied	Issuing of IFRS 17	1 January 2023	1 April 2023	No material impact expected.
IFRS 3 Business Combinations	Not applied	Reference to the Conceptual Framework	1 January 2022	1 April 2022	No material impact expected.
IFRS 16 Leases	Not applied	IFRS Taxonomy Update COVID-19-Related Rent Concessions	1 June 2020	1 April 2021	No material impact expected.
IFRS 9 Financial Instruments	Not applied	IFRS Taxonomy Update Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IAS 39 Financial Instruments: Recognition and Measurement	Not applied	IFRS Taxonomy Update Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IFRS 7 Financial Instruments: Disclosures	Not applied	IFRS Taxonomy Update Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IFRS 4 Insurance Contracts	Not applied	IFRS Taxonomy Update Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IFRS 16 Leases	Not applied	IFRS Taxonomy Update Interest Rate Benchmark Reform - Phase 2	1 January 2021	1 April 2021	No material impact expected.
IAS 1 Presentation of Financial Statements	Not applied	Classification of Liabilities as Current or Non-current	1 January 2022	1 April 2022	No material impact expected.
IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors	Not applied	Definition of Accounting Estimates	1 January 2023	1 April 2023	Possible changes to the wording of accounting policies and notes to align to the new definition
IAS 1 Presentation of Financial Statements	Not applied	Disclosure of Accounting Policies	1 January 2023	1 April 2023	Possible changes to the wording of accounting policies to align to the new description. The content of what is described in the accounting policies may also change.

Notes to the Annual Financial Statements

3.2 Standards and interpretations not yet effective (continued)

Title of the IFRS	Whether it was applied in the current year AFS	Nature of the impending change or changes in accounting policy	Application of the IFRS is required for periods beginning on or after	Initial application of the IFRS is planned for the financial year beginning on	Expected impact of the initial application on the financial statements
Practice Statement 2 Making Materiality Judgements	Not applied	Disclosure of Accounting Policies	1 January 2023	1 April 2023	Possible changes to the wording of accounting policies to align to the new description. The content of what is described in the accounting policies may also change.
IFRS 7 Financial Instruments: Disclosures	Not applied	Disclosure of Accounting Policies	1 January 2023	1 April 2023	Possible changes to the wording of accounting policies to align to the new description. The content of what is described in the accounting policies may also change.
IAS 26 Accounting and Reporting by Retirement Benefit Plans	Not applied	Disclosure of Accounting Policies	1 January 2023	1 April 2023	Possible changes to the wording of accounting policies to align to the new description. The content of what is described in the accounting policies may also change.
IAS 34 Interim Financial Reporting	Not applied	Disclosure of Accounting Policies	1 January 2023	1 April 2023	No material impact expected.
IFRS 8 Operating Segments	Not applied	Disclosure of Accounting Policies	1 January 2023	1 April 2023	No material impact expected.
IAS 12 Income Taxes	Not applied	Deferred Tax related to Assets and Liabilities arising from a Single Transaction	1 January 2023	1 April 2023	No material impact expected.
IFRS 1 First-time Adoption of International Financial Reporting Standards	Not applied	Deferred Tax related to Assets and Liabilities arising from a Single Transaction	1 January 2023	1 April 2023	No material impact expected.
IFRS 16 Leases	Not applied	COVID-19-Related Rent Concessions beyond 30 June 2021	1 April 2021	1 April 2021	No material impact expected.
IFRS 17 Insurance Contracts	Not applied	IFRS Taxonomy 2020 Extension of the Temporary Exemption from Applying IFRS 9 and Property, Plant and Equipment - Proceeds before Intended Use	1 January 2023	1 April 2023	No material impact expected.
IFRS 9 Financial Instruments	Not applied	IFRS Taxonomy 2020 Extension of the Temporary Exemption from Applying IFRS 9 and Property, Plant and Equipment - Proceeds before Intended Use	1 January 2023	1 April 2023	No material impact expected.
IAS 16 Property	Not applied	IFRS Taxonomy 2020 Extension of the Temporary Exemption from Applying IFRS 9 and Property, Plant and Equipment - Proceeds before Intended Use	1 January 2023	1 April 2023	No material impact expected.

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY

Group	2021			2020			2019		
	Cost / Valuation	Accumulated depreciation / Impairment	Carrying value	Cost / Valuation	Accumulated depreciation / Impairment	Carrying value	Cost / Valuation	Accumulated depreciation / Impairment	Carrying value
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Used within the Group									
Research facilities	40,979	(9,334)	31,645	40,485	(8,719)	31,766	33,891	(8,053)	25,838
Component spares	907	(540)	367	907	(460)	447	2,303	(516)	1,787
Finance lease assets	-	-	-	-	-	-	25,670	(20,001)	5,669
Furniture and fixtures	22,597	(18,359)	4,238	22,243	(17,605)	4,638	21,457	(16,951)	4,506
IT equipment	127,468	(105,483)	21,985	130,622	(107,560)	23,062	123,567	(101,184)	22,383
Land and buildings	946,670	(43,896)	902,774	871,125	(38,179)	832,946	901,363	(27,696)	873,667
Leasehold improvements	3,647	(1,356)	2,291	3,647	(977)	2,670	3,647	(599)	3,048
Machinery and equipment	470,833	(358,654)	112,179	451,243	(328,035)	123,208	439,924	(299,308)	140,616
Motor vehicles and transport containers	66,917	(52,216)	14,701	60,853	(50,153)	10,700	60,466	(48,319)	12,147
Office equipment	14,661	(13,870)	791	14,702	(13,611)	1,091	14,356	(12,928)	1,428
Plant	628,225	(325,093)	303,132	624,917	(316,976)	307,941	609,488	(306,601)	302,887
Leased out under operating leases									
Buildings	14,632	-	14,632	14,632	-	14,632	-	-	-
Total	**2,337,536**	**(928,801)**	**1,408,735**	**2,235,376**	**(882,275)**	**1,353,101**	**2,236,132**	**(842,156)**	**1,393,976**

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Company	2021			2020			2019		
	Cost / Valuation	Accumulated depreciation / Impairment	Carrying value	Cost / Valuation	Accumulated depreciation / Impairment	Carrying value	Cost / Valuation	Accumulated depreciation / Impairment	Carrying value
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Finance lease assets	-	-	-	-	-	-	25,670	(20,001)	5,669
Furniture and fixtures	15,275	(13,490)	1,785	15,101	(13,130)	1,971	14,452	(12,852)	1,600
IT equipment	71,958	(60,375)	11,583	76,090	(64,246)	11,844	74,043	(60,901)	13,142
Land and buildings	918,607	(43,701)	874,906	843,162	(37,984)	805,178	859,168	(27,503)	831,665
Machinery and equipment	355,088	(274,437)	80,651	348,836	(252,139)	96,697	341,340	(229,571)	111,769
Motor vehicles and transport containers	30,720	(23,114)	7,606	25,580	(21,540)	4,040	25,580	(20,343)	5,237
Office equipment	12,586	(12,048)	538	12,541	(11,756)	785	12,277	(11,188)	1,089
Plant	209,571	(124,050)	85,521	207,564	(122,411)	85,153	206,596	(120,510)	86,086
Research facilities	40,979	(9,334)	31,645	40,485	(8,719)	31,766	33,891	(8,053)	25,838
Total	**1,654,784**	**(560,549)**	**1,094,235**	**1,569,359**	**(531,925)**	**1,037,434**	**1,593,017**	**(510,922)**	**1,082,095**

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Reconciliation of property, plant and equipment - Group - 2021

	Opening balance	Additions for continuing operations	Disposals	Revaluations	Other changes, movements	Depreciation in discontinued operations	Depreciation in continuing operations	Impairment loss/reversal	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Used within the Group									
Component spares	447	-	-	-	-	-	(80)	-	367
Furniture and fixtures	4,638	516	(26)	-	-	(17)	(858)	(15)	4,238
IT equipment	23,062	6,841	(42)	-	(850)	(140)	(6,874)	(12)	21,985
Land and buildings	832,946	222	-	113,306	-	-	(43,700)	-	902,774
Leasehold improvements	2,670	-	-	-	-	-	(379)	-	2,291
Machinery and equipment	123,208	17,951	(41)	-	-	-	(28,894)	(45)	112,179
Motor vehicles and transport containers	10,700	7,164	(419)	-	-	(117)	(2,627)	-	14,701
Office equipment	1,091	98	(6)	-	-	(6)	(389)	3	791
Plant	307,941	5,111	(3)	-	-	-	(8,266)	(1,651)	303,132
Research facilities	31,766	495	-	-	-	-	(616)	-	31,645
Leased out under operating leases	14,632	-	-	-	-	-	-	-	14,632
Buildings									
	1,353,101	**38,398**	**(537)**	**113,306**	**(850)**	**(280)**	**(92,683)**	**(1,720)**	**1,408,735**

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Reconciliation of property, plant and equipment - Group - 2020

	Opening balance	Additions for continuing operations	Disposals	Revaluations	Other changes, movements	Depreciation in discontinued operations	Depreciation in continuing operations	Impairment loss/reversal	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Component spares	1,788	-	(50)	-	(838)	-	(453)	-	447
Finance lease assets (1)	5,669	-	-	-	(5,669)	-	-	-	-
Furniture and fixtures	4,506	967	(3)	-	-	(125)	(719)	12	4,638
IT equipment	22,384	8,202	(51)	-	-	(145)	(7,339)	11	23,062
Land and buildings	873,668	2,895	-	9,001	(14,632)	-	(37,986)	-	832,946
Leasehold improvements	3,048	-	-	-	-	-	(378)	-	2,670
Machinery and equipment	140,615	11,905	(14)	-	-	-	(29,247)	(51)	123,208
Motor vehicles and transport containers	12,147	1,625	(169)	-	(587)	-	(2,319)	4	10,700
Office equipment	1,427	387	-	-	-	-	(718)	(5)	1,091
Plant	302,886	15,439	(3)	-	-	(362)	(8,704)	(1,315)	307,941
Research facilities	25,838	6,594	-	-	-	-	(666)	-	31,766
Buildings	-	-	-	-	14,632	-	-	-	14,632
	1,393,976	**48,014**	**(290)**	**9,001**	**(7,094)**	**(632)**	**(88,529)**	**(1,344)**	**1,353,101**

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Reconciliation of property, plant and equipment - Group - 2019

	Opening balance	Additions for continuing operations	Disposals	Revaluations	Depreciation in continuing operations	Impairment loss/reversal	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Component spares	1,881	-	-	-	(93)	-	1,788
Finance lease assets (1)	5,882	1,621	-	-	(1,834)	-	5,669
Furniture and fixtures	5,200	215	(5)	-	(848)	(56)	4,506
IT equipment	23,918	7,845	(105)	-	(9,200)	(74)	22,384
Land and buildings	809,492	6,283	-	85,403	(27,508)	(2)	873,668
Leasehold improvements	3,426	-	-	-	(378)	-	3,048
Machinery and equipment	147,484	19,005	(87)	-	(25,720)	(67)	140,615
Motor vehicles and transport containers	14,352	1,727	(556)	-	(3,176)	(201)	12,147
Office equipment	1,882	1,306	(7)	-	(1,760)	6	1,427
Plant	327,092	12,350	(125)	-	(9,735)	(26,696)	302,886
Research facilities	25,905	675	-	-	(742)	-	25,838
	1,366,514	**51,027**	**(885)**	**85,403**	**(80,994)**	**(27,090)**	**1,393,976**

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Reconciliation of property, plant and equipment - Company - 2021

	R '000	R '000	R '000	R '000	R '000	R '000	R '000
Furniture and fixtures	1,971	175	-	-	-	(361)	1,785
IT equipment	11,844	4,238	(26)	-	-	(4,473)	11,583
Land and buildings	805,178	222	-	113,207	-	(43,701)	874,906
Machinery and equipment	96,697	6,252	-	-	-	(22,298)	80,651
Motor vehicles and transport containers	4,040	5,141	-	-	-	(1,575)	7,606
Office equipment	785	45	-	-	-	(292)	538
Plant	85,153	2,007	-	-	-	(1,639)	85,521
Research facilities	31,766	494	-	-	-	(615)	31,645
	1,037,434	**18,574**	**(26)**	**113,207**	**-**	**(74,954)**	**1,094,235**

Reconciliation of property, plant and equipment - Company - 2020

	Opening balance	Additions	Disposals	Revaluations	Depreciation	Total
	R '000	R '000	R '000	R '000	R '000	R '000
Furniture and fixtures	1,600	691	-	-	(320)	1,971
IT equipment	13,142	3,209	(36)	-	(4,471)	11,844
Land and buildings	831,665	2,896	-	8,600	(37,983)	805,178
Machinery and equipment	111,769	7,609	(14)	-	(22,667)	96,697
Motor vehicles and transport containers	5,237	-	-	-	(1,197)	4,040
Office equipment	1,089	293	-	-	(597)	785
Plant	86,086	968	-	-	(1,901)	85,153
Research facilities	25,838	6,594	-	-	(666)	31,766
	1,076,426	**22,260**	**(50)**	**8,600**	**(69,802)**	**1,037,434**

Notes to the Annual Financial Statements

4. INVESTMENT PROPERTY (CONTINUED)

Reconciliation of property, plant and equipment - Company - 2019

	Opening balance	Additions	Disposals	Revaluations	Depreciation	Total
	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	97	-	-	(304)	1,600
IT equipment	10,341	7,069	(16)	-	(4,252)	13,142
Land and buildings	777,382	6,283	-	75,503	(27,503)	831,665
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
	1,031,233	**34,044**	**(38)**	**75,503**	**(58,647)**	**1,082,095**

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

4. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

(1) Finance leases relate to electronic office equipment and motor vehicles. This is for the financial year 2019 under IAS 17 before the adoption of IFRS 16. 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, 31 March 2020 and 31

March 2021 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 2021 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.

Changes in estimates

During the year, there was a change in the estimated useful lives of certain assets. The effect of each class is as follows:

Decrease in depreciation expense recognised for the year	-	-	-	4,832	-	-

The change in estimated useful lives of certain assets will have the effect that the depreciation expense that will be recognised in future, will be higher by R4 832 000.

Revaluations (Necsa)

During 2019, 2020 and 2021 Land and Buildings were valued by an independent valuer. The carrying amount that would have been recognised, had the asset been carried under the cost model would have been as follows:

Land	-	-	-	2,002	2,002	2,002
Buildings	-	-	-	17,052	17,949	18,847
	-	**-**	**-**	**19,054**	**19,951**	**20,849**

Other information

The impact of COVID-19 was taken into account when property, plant and equipment were assessed for indications to impairment. There was no impact on the valuation of property, plant and equipment due to the COVID-19 pandemic.

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

5. INTANGIBLE ASSETS

Group	2021			2020			2019		
	Cost / Valuation	Accumulated amortisation	Carrying value	Cost / Valuation	Accumulated amortisation	Carrying value	Cost / Valuation	Accumulated amortisation	Carrying value
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Computer software	4,067	(2,906)	1,161	4,075	(1,955)	2,120	2,468	(1,572)	896
Intellectual property	124,283	(104,336)	19,947	124,283	(98,893)	25,390	124,283	(93,451)	30,832
Total	**128,350**	**(107,242)**	**21,108**	**128,358**	**(100,848)**	**27,510**	**126,751**	**(95,023)**	**31,728**

Company	2021			2020			2019		
	Cost / Valuation	Accumulated amortisation	Carrying value	Cost / Valuation	Accumulated amortisation	Carrying value	Cost / Valuation	Accumulated amortisation	Carrying value
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Computer software	1,360	(671)	689	1,493	-	1,493	-	-	-

Reconciliation of intangible assets - Group - 2021

	Opening balance	Additions	Amortisation	Total
	R'000	R'000	R'000	R'000
Computer software	2,120	176	(1,135)	1,161
Intellectual property	25,390	-	(5,443)	19,947
	27,510	**176**	**(6,578)**	**21,108**

Reconciliation of intangible assets - Group - 2020

	Opening balance	Additions	Disposals	Classified as held for sale	Transfers	Amortisation	Impairment loss	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Computer software	897	1,607	-	-	-	(384)	-	2,120
Intellectual property	30,832	-	-	-	-	(5,442)	-	25,390
	31,729	**1,607**	**-**	**-**	**-**	**(5,826)**	**-**	**27,510**

Notes to the Annual Financial Statements

Reconciliation of intangible assets - Group - 2019

	Opening balance	Additions	Amortisation	Impairment loss	Total
	R'000	R'000	R'000	R'000	R'000
Computer software	945	211	(260)	R-	-896
Patents, trademarks and other rights	36,274	-	(5,442)	-	30,832
	37,219	**211**	**(5,702)**	**-**	**31,728**

Reconciliation of intangible assets - Company - 2021

	Opening balance	Disposals	Amortisation	Total
	R'000	R'000	R'000	R'000
Computer software	1,493	(133)	(671)	689

Reconciliation of intangible assets - Company - 2020

	Opening balance	Additions	Total
	R'000	R'000	R'000
Computer software	-	1,493	1,493

Notes to the Annual Financial Statements

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

Company							
Name of company	Held by	% holding 2021	% holding 2020	% holding 2019	Carrying amount 2021	Carrying amount 2020	Carrying amount 2019
					R'000	R'000	R'000
Pelchem SOC Limited	Necsa SOC Ltd	100 %	100 %	100 %	-	-	-
NTP Radioisotopes SOC Limited	Necsa SOC Ltd	100 %	100 %	100 %	220,700	220,700	220,700
Cyclofil SOC Limited	Necsa SOC Ltd	100 %	100 %	100 %	-	-	-
Arecsa SOC Limited	Necsa SOC Ltd	51 %	51 %	51 %	1	1	1
					220,701	**220,701**	**220,701**

The impact of COVID-19 was taken into account when determining the fair value of the interest in subsidiaries. There was no impact on the fair value of the investment in subsidiaries due to the COVID-19 pandemic

Notes to the Annual Financial Statements

7. INVESTMENTS IN ASSOCIATES

The following table lists all of the associates in the Group:

Group										
Name of company	Held by	% ownership interest	% ownership interest	% ownership interest	Carrying amount	Carrying amount	Carrying amount	Fair value	Fair value	Fair value
		2021	2020	2019	2021	2020	2019	2021	2020	2019
					R'000	R'000	R'000	R'000	R'000	R'000
Business Venture International No.33 (Pty) Ltd	Necsa SOC Ltd	42.00 %	42.00 %	42.00 %	2	2	2	2	2	2
Gamwave (formerly Cyclotope, a subsidiary)	NTP Radioisotopes SOC Ltd	40.00 %	40.00 %	40.00 %	-	-	-	-	-	-
Oserix	Gammatec NDT Supplies SOC Ltd	25.00 %	25.00 %	25.00 %	7,196	4,925	4,331	7,196	4,925	4,331
Element 42	Necsa SOC Ltd	50.00 %	50.00 %	50.00 %	-	-	-	-	-	-
					7,198	4,927	4,333	7,198	4,927	4,333
					7,198	**4,927**	**4,333**	**7,198**	**4,927**	**8,151**

Company										
Name of company	Held by	% ownership interest	% ownership interest	% ownership interest	Carrying amount	Carrying amount	Carrying amount	Fair value	Fair value	Fair value
		2021	2020	2019	2021	2020	2019	2021	2020	2019
					R'000	R'000	R'000	R'000	R'000	R'000
Business Venture International No.33 (Pty) Ltd	Necsa SOC Ltd	42.00 %	42.00 %	42.00 %	2	2	2	2	2	2

Oserix is an associate of Gammatec NDT Supplies SOC Ltd, which holds 25% of Oserix issued share capital. NTP Radioisotopes SOC Ltd holds 55% of Gammatec NDT Supplies SOC Ltd, therefore resulting in the group having significant influence over the associate.

The impact of COVID-19 was taken into account when the investments in associates were assessed for indications to impairment. There was no impact on the investments in associates due to the COVID-19 pandemic.

Notes to the Annual Financial Statements

7. INVESTMENTS IN ASSOCIATES (CONTINUED)

The carrying amounts of Investments in Associates are shown net of impairment losses.

The Directors' value of the investment in associates is equal to its carrying value.

Material associates

The following associates are material to the Group:

Summary of the group's interest in associate Oserix S.A.	2021	2020	2019
Summarised statement of profit and loss and other comprehensive income	**R'000**	**R'000**	**R'000**
Revenue	156,750	132,795	211,020
Other income and expenses	(143,133)	(129,290)	(208,691)
Tax expense	(3,463)	(996)	(158)
Profit from continuing operations	10,155	2,509	2,171
Dividends Received from associate	267	32	-
Summarised Statement of Financial			
Position			
Assets			
Non-current	4,317	4,922	6,819
Current	50,589	57,684	61,269
Total Assets	54,906	62,606	68,088
Liabilities			
Non-current	2,171	2,475	3,191
Current	32,409	36,955	37,807
Total Liabilities	34,580	39,429	40,997
Total Net Assets	20,326	23,177	27,090
Reconciliation of equity accounted investments in associates			
Investment at beginning of period	4,925	4,331	3,816
Share of profit	2,539	627	514
Dividends received from associate	(267)	(33)	-
Investment at end of period	7,196	4,925	4,331

The end of the reporting year of Oserix S.A is 31 December 2020. It was impracticable to obtain financial statements as at 31 March 2021.

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

8. LOANS TO (FROM) GROUP COMPANIES

Subsidiaries

Pelchem SOC Limited	-	-	-	(1,522)	(679)	(13)
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	-	-	-	(47)	72	(58)
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	-	-	-	(47,537)	(45,544)	(42,462)
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 been 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 excluding interest. The loan repayment date was extended to 31 March 2022.						
NTP - FED	-	-	-	-	84,709	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 forward will not be paid.						
In January 2021, the NTP Board reversed the 2018 NTP decision to withhold these funds. As such, an amount of R56.6million was paid over to Necsa as full and final settlement of the funds that were withheld by NTP as at January 2021.						
	-	**-**	**-**	**(49,106)**	**38,558**	**7,818**
Non-current assets	-	-	-	-	84,709	50,351
Current assets	-	-	-	-	72	-
Current liabilities	-	-	-	(49,106)	(46,223)	(42,533)
	-	**-**	**-**	**(49,106)**	**38,558**	**7,818**

The impact of COVID-19 was taken into account when loans to/from Group companies were assessed for indications to impairment. There was no impact on the valuation of loans to/from Group companies due to the COVID-19 pandemic

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

8. LOANS TO (FROM) GROUP COMPANIES (CONTINUED)

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.

9. OTHER FINANCIAL ASSETS

At fair value through profit or loss						
Unit trusts	263,875	216,672	193,939	263,875	216,672	193,939
Revaluation of open forward exchange contracts	2,149	-	-	-	-	-
	266,024	**216,672**	**193,939**	**263,875**	**216,672**	**193,939**
Financial assets measured at fair value through other comprehensive income						
Listed shares	1,055	881	1,452	1,026	856	1,416
Financial assets measured at amortised costs						
Ring-fenced and 3rd party funds and other short term investments	459,801	337,338	313,813	457,781	335,380	312,074
Loans and receivables						
Retention fees receivable (1)	273	1,673	1,868	273	1,673	1,868
Total other financial assets	**727,153**	**556,564**	**511,072**	**722,955**	**554,581**	**509,297**

Ring-fenced, 3rd party funds and other short term investments are investments that are ring-fenced and must be used for a specific purpose, or are held on behalf of 3rd parties. These are all investments linked to various bank accounts and no expected credit losses can therefore apply as the values cannot decrease due to economic factors.

(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.

Non-current assets						
Designated as at Fair Value through profit or loss	263,875	216,672	193,939	263,875	216,672	193,939
Financial assets measured at fair value through other comprehensive income	1,055	881	1,452	1,026	856	1,416
Loans and receivables	273	1,673	1,868	273	1,673	1,868
	265,203	**219,226**	**197,259**	**265,174**	**219,201**	**197,223**
Current assets						
Designated as at FV through profit (loss) (FV through income)	2,149	-	-	-	-	-
Short term investments	459,801	337,338	313,813	457,781	335,380	312,074
	461,950	**337,338**	**313,813**	**457,781**	**335,380**	**312,074**
	727,153	**556,564**	**511,072**	**722,955**	**554,581**	**509,297**

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

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

9. OTHER FINANCIAL ASSETS (CONTINUED)

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	47	66	95	47	41	59
Old Mutual - Ordinary shares	456	428	790	456	428	790
Quilter Ordinary shares	391	309	330	391	309	330
Nedbank Ordinary shares	132	78	237	132	78	237
Revaluation of open forward exchange contracts	2,149	-	-	-	-	-
Unit Trusts - Collective Investment Schemes	263,875	216,673	193,939	263,875	216,673	193,939
	267,050	**217,554**	**195,391**	**264,901**	**217,529**	**195,355**

10. DEFERRED TAX

Deferred tax liability						
Property, plant and equipment	(30,421)	(26,723)	(26,337)	-	-	-
Prepayments	(97)	(165)	(207)	-	-	-
Doubtful debt allowance	(3,496)	(2,651)	(756)	-	-	-
Revaluation of property	(2,688)	(4,858)	(4,746)	-	-	-
Right of use assets	(7,032)	(7,743)	(1,816)	-	-	-
Section 24C	(2,321)	(2,193)	(631)	-	-	-
Forex adjustment s24j	(1,042)	(1,042)	(1,041)	-	-	-
Revaluation reserve	(2,198)	-	-	-	-	-
Investments at fair value	(3)	-	(4)	-	-	-
	(49,298)	**(45,375)**	**(35,538)**	**-**	**-**	**-**

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

10. DEFERRED TAX (CONTINUED)

Deferred tax asset						
Trade receivables with credit balances	-	84	505	-	-	-
Provision for expected credit losses	2,397	1,683	4,518	-	-	-
Tax Loss carried forward	85,903	70,285	55,588	-	-	-
Inventory impairment	2,302	1,631	2,017	-	-	-
Provision for leave pay	8,816	5,149	4,926	-	-	-
Provision for bad debts	8,071	7,645	7,266	-	-	-
Provision for 13th cheque	10,645	880	887	-	-	-
Fair value and IFRS adjustment	-	226	(809)	-	-	-
Provision for waste disposal	27,442	52,619	33,784	-	-	-
Income received in advance	3,563	7,062	4,968	-	-	-
Effective interest rate adjustment	93	92	243	-	-	-
Provision for bonus	3,419	871	2,936	-	-	-
Other personnel provisions	391	7,911	12,274	-	-	-
Lease liability	9,216	9,338	-	-	-	-
Retirement benefit liability	7,577	6,044	-	-	-	-
Prior year adjustments	-	-	5,857	-	-	-
	169,835	**171,520**	**134,960**	**-**	**-**	**-**
Please refer to note 38 as deferred tax was restated due to a prior year error.						
Deferred tax asset	169,835	171,520	134,960	-	-	-
Deferred tax liability	(49,298)	(45,375)	(35,538)	-	-	-
Total net deferred tax asset	**120,537**	**126,145**	**99,422**	**-**	**-**	**-**

11. INVENTORIES

Raw materials	5,643	9,004	12,459	-	-	-
Work in progress	29,135	21,527	3,025	27,319	20,430	917
Finished goods	28,338	36,735	34,278	-	-	-
Life science products and equipment	14,199	14,376	10,226	-	-	-
Production supplies	15,687	16,265	23,958	-	-	-
Goods in transit	264,498	224,920	179,049	-	-	-
Consumables	47,085	60,519	62,855	31,668	49,271	43,920
Other inventories for sale	723	1,047	626	-	-	-
	405,308	384,393	326,476	58,987	69,701	44,837
Allowance for slow moving stock	(33,198)	(19,530)	(18,706)	(5,493)	(4,514)	(3,448)
	372,110	**364,863**	**307,770**	**53,494**	**65,187**	**41,389**
Total inventories at the lower of cost and net realisable value	372,110	364,863	307,770	53,494	65,187	41,389

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

11. INVENTORIES (CONTINUED)

Impaired amount of categories of inventory

Life Science products and equipment	2,587	1,841	365	-	-	-
Finished goods	7,622	6,961	6,565	5,493	4,514	3,448
Production supplies	22,777	9,986	11,361	-	-	-
Consumables	212	742	415	-	-	-
	33,198	**19,530**	**18,706**	**5,493**	**4,514**	**3,448**

Amounts recognised in profit or loss

Write-downs for slow moving inventories to net realisable value amounted to R5 493 (2020 : R4 514) (2019 : R3 448) for the company and R33 198 (2020 : R19 530) (2019 : (R18 706) for the Group. These were recognised as an expense during the year ended 31 March 2021 and was recognised in cost of sales.

The impact of COVID-19 was taken into account when the net realisable value of inventories was assessed. There was no impact on the valuation of inventory due to the COVID-19 pandemic.

12. TRADE AND OTHER RECEIVABLES

Financial Instruments

Trade receivables	324,694	262,651	523,983	178,556	55,400	95,559
Employee costs in advance	-	-	25	-	-	-
Deposits	79	79	79	18	18	18
Staff fuel debtors	3,453	493	(5,626)	1,515	505	1,566
Other receivables	5,651	3,763	3,697	-	-	-
Other receivables Staff	15,273	22,435	91,219	3,259	3,070	361
VAT	29,778	29,963	15,459	-	641	-
	378,928	**319,384**	**628,836**	**183,348**	**59,634**	**97,504**

Trade and other receivables pledged as security

No trade and other receivables have been pledged as security.

Classification as Trade Receivables

Trade receivables are amounts due from customers for goods sold or services performed in the ordinary course of business. They are generally due for settlement within 30 days and are therefore all classified as current. Trade receivables are recognised initially at the amount of consideration that is unconditional, unless they contain significant financing components, when they are recognised at fair value. The Group holds the trade receivables with the objective of collecting the contractual cash flows and therefore measures them subsequently at amortised cost using the effective interest method. Details about the Group's impairment policies and the calculation of the loss allowance are provided below.

Included in other receivables are sundry debtors and other miscellaneous items, of which sundry debtors form the biggest part of the total.

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

12. TRADE AND OTHER RECEIVABLES (CONTINUED)

Trade receivables

Fair value of trade and other receivables

Trade and other receivables	378,928	319,384	628,836	183,348	59,634	97,504

Trade and other receivables are initially measured at fair value and are subsequently measured at amortised cost using the effective interest rate method.

Due to the short-term nature of the current receivables, their carrying amount is considered to be the same as their fair value.

The Group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables

The recoverability of customers with outstanding balances of over R 100 000 were individually assessed, taking each individual customer's circumstances into account. Balances which were older than 90 days for customers with a balances of less than R 100 000 each, were provided for as expected credit losses. The recoverability of customers with outstanding balances of over R 100 000 were individually assessed, taking each individual customer's circumstances into account. Balances which were older than 90 days for customers with a balances of less than R 100 000 each, were provided for as expected credit losses.

On that basis, the loss allowance as at 31 March 2020 was determined as follows for trade receivables:

Trade Receivables Credit Risk

Group

2021	Current	1-30 days	31-60 days	61-90 days	over 90 days	Total
Gross Carrying amount	156,902	64,231	17,716	9,923	135,161	383,933
Expected loss rate	- %	- %	1.00 %	1.00 %	43.00 %	
Loss allowance	**200**	**56**	**171**	**99**	**58,712**	**59,239**

NECSA

2021	Current	1-30 days	31-60 days	61-90 days	over 90 days	Total
Gross Carrying amount	125,856	2,952	3,996	1,740	278,231	412,775
Expected Loss Rate					94.0	64.00 %
Loss Allowance	**-**	**-**	**-**	**-**	**262,840**	**262,840**
2020	**Current**	**1-30 days**	**31-60 days**	**61-90 days**	**over 90 days**	**Total**
Gross Carrying amount	51,243	5,857	1,821	4,546	291,292	354,759
Expected Loss Rate					100.0	82.10 %
Loss Allowance	**-**	**-**	**-**	**-**	**291,292**	**291,292**
2019	**Current**	**1-30 days**	**31-60 days**	**61-90 days**	**over 90 days**	**Total**
Gross Carrying amount	69,095	9,750	5,870	2,849	217,750	305,314
Expected Loss Rate		20.9			84.2	60.74 %
Loss Allowance	**-**	**2,040**	**-**	**-**	**183,425**	**185,465**

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

12. TRADE AND OTHER RECEIVABLES (CONTINUED)

The Group writes off debtors based on a line by line basis on amounts greater than R100 000 in the over 90 days aging bracket, taking into consideration whether the debtor is in severe financial difficulty and whether there is no realistic prospect of recovery.

The loss allowances for trade receivables as at 31 March 2021 reconcile to the opening loss allowances as follows:

Opening loss allowance at 1 April	89,913	32,562	155,063	291,292	185,464	122,838
Increase in loss allowance recognised in profit or loss during the year	-	57,352	60,438	-	105,828	62,627
Cumulative prior period consolidation journal error correction	-	-	(182,939)	-	-	-
Unused amounts reversed	(30,674)	-	-	(28,452)	-	-
	59,239	**89,914**	**32,562**	**262,840**	**291,292**	**185,465**

Trade receivables are written off where there is no reasonable expectation of recovery. Indicators that there is no reasonable expectation of recovery include, amongst others, the failure of a debtor to engage in a repayment plan with the Group, and a failure to make contractual payments for a period of greater than 90 days past due.

These definitions for defaults as aforementioned were selected, because they are expected to result in the most accurate measurement of the expected credit loss.

Impairment losses on trade receivables are presented as net impairment losses within operating profit. Subsequent recoveries of amounts previously written off are credited against the same line item.

13. CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of:						
Cash on hand	88	66	104	67	36	59
Bank balances	77,881	81,450	111,499	21,084	16,594	21,775
Short-term deposits	91,765	66,407	253,199	-	-	-
Other cash and cash equivalents	-	54,989	10,000	-	-	-
Bank overdraft	(14,004)	(23,909)	(45,959)	-	(188)	(20,000)
	155,730	**179,003**	**328,843**	**21,151**	**16,442**	**1,834**
Current assets	169,734	202,910	374,800	21,151	16,630	21,834
Current liabilities (1)	(14,004)	(23,909)	(45,959)	-	(188)	(20,000)
	155,730	**179,001**	**328,841**	**21,151**	**16,442**	**1,834**

(1) The current liabilities are made up as follows:

Current liabilities						
Gammatec	-	(7,777)	(7,962)	-	-	-
Pelchem	(14,000)	(15,940)	(17,997)	-	-	-
Necsa (1)	-	(188)	(20,000)	-	(188)	(20,000)
NTP Radioisotopes	-	(1)	-	-	-	-
Arecsa	(4)	(3)	-	-	-	-
	(14,004)	**(23,909)**	**(45,959)**	**-**	**(188)**	**(20,000)**

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

13. CASH AND CASH EQUIVALENTS (CONTINUED)

(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 R20 000 000 of the Overnight Loan Facility during August 2018 (2018/19 Financial year).

Please refer to note 38 as cash and cash equivalents was restated due to a prior year error.

Details of facilities

The overdraft facility was revoked during the 2019/20 financial year. The negative balance of R188 000 in the previous year is related to forex losses that were recognised at year end. This was due to market fluctuations during the height of the COVID-19 pandemic influencing on the markets. There is no set repayment terms of the overdraft and interest is charged at prime less 1.5%. There are 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
Asset based financing	4,000	4,000	8,000	4,000	4,000	8,000
Bills of exchange	100	100	100	-	-	-
CFC	2,000	2,000	2,000	-	-	-
Forex-potential future exposure trading limits	1,280	1,280	1,280	-	-	-
Commitments regarding guarantees (local)	2,200	2,200	2,200	-	-	-
Corporate credit card	5,111	5,115	115	5,000	5,000	-
FEC's	65,835	68,835	90,835	35,000	38,000	60,000
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	6,000	6,000	6,000	5,000	5,000	15,000
Letter of Guarantee	32,000	32,000	32,000	-	-	-
Letter of credit	450	450	450	-	-	-
Overdraft	16,500	16,500	26,500	-	-	-
Vehicle and asset finance	5,290	5,290	5,290	-	-	-
Total facilities	**148,661**	**151,665**	**202,665**	**49,000**	**52,000**	**103,000**

* Figures restated - refer to note 38

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 decision was made to discontinue operations due to the lack of return and suitable profitable trading activities.

Gammatec Middle East General Trading LLC has been liquidated during the 2021 financial year end

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 2021 are set out below. The decision was made to discontinue operations due to the lack of return and suitable profitable trading activities.

Gammatec Aseana NDT Supplies SDN.BHD, after the final settlement of trade receivables, trade payables and final dividend distribution Gammatec Aseana NDT Supplies SDN.BHD . Gammatec Aseana NDT Supplies SDN.BHD have applied for liquidation and the liquidation is expected to be finalised with the 2022 financial year end.

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

14. DISCONTINUED OPERATIONS (CONTINUED)

Profit and loss						
Sundry Income	-	-	(10)	-	-	-
Cost of Sales	-	2	43	-	-	-
Gross profit	-	2	33	-	-	-
Operating Income	-	3	1,721	-	-	-
Operating expenses	66	-	(586)	-	-	-
Operating profit/ (loss)	66	5	1,754	-	-	-
Profit/ (Loss) from discontinued operations	**66**	**5**	**1,168**	**-**	**-**	**-**
Assets and liabilities						
Assets of discontinued operations						
Trade and other receivables	-	27	3,333	-	-	-
Other financial assets	716	-	-	-	-	-
Tax receivable	-	153	115	-	-	-
	716	**180**	**3,448**	**-**	**-**	**-**
Liabilities of discontinued operations						
Trade and other payables	51	116	295	-	-	-

15. SHARE CAPITAL

Authorised						
500 000 000 ordinary shares at R1 each	500,000	500,000	500,000	500,000	500,000	500,000
There were no changes in authorised share capital.						
Reconciliation of number of shares issued:						
Reported as at 31 March 2021	2,205	2,205	2,205	2,205	2,205	2,205
Issued:						
Ordinary	2,205	2,205	2,205	2,205	2,205	2,205

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	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	10,901	11,543	1,963	10,895	83	1,118
Held at amortised cost	453	2,101	-	-	-	-
Standard Bank - Instalment sale agreements						
These loans are secured by Demo Stock as per note 11. The loans are repaid in monthlly instalments over a period of 5 years and is subject to interest linked to prime.						
First National Bank - Mortgage	1,590	2,909	4,408	-	-	-
This loan is secured by a first mortgage bond registered over land and buildings Portion 91 of Farm 601, Klipplaatdrif, Vereeniging (Note 4). Interest is charged at prime rate minus 1%. The bond is repayable in equal monthly instalments of R150, 008 over 120 months.						
	2,043	**5,010**	**4,408**	**-**	**-**	**-**
	12,944	**16,553**	**6,371**	**10,895**	**83**	**1,118**
Non-current liabilities						
At amortised cost	-	2,319	4,408	-	-	-
Current liabilities						
Fair value through profit or loss	10,901	11,543	1,963	10,895	83	1,118
At amortised cost	2,043	2,691	-	-	-	-
	12,944	**14,234**	**1,963**	**10,895**	**83**	**1,118**
	12,944	**16,553**	**6,371**	**10,895**	**83**	**1,118**

* Figures restated - refer to note 38

17. LEASES AND RIGHT-OF-USE ASSETS

Group	2021			2020		
	Cost / Valuation	Accumulated depreciation	Carrying value	Cost / Valuation	Accumulated depreciation	Carrying value
	R'000	R'000	R'000	R'000	R'000	R'000
Right-of-use assets - Vehicles	7,850	(1,722)	6,128	6,880	(376)	6,504
Right-of-use assets - Equipment	17,720	(15,508)	2,212	17,470	(13,793)	3,677
Right-of-use assets - Buildings	657	(19)	638	388	(202)	186
Total	**26,227**	**(17,249)**	**8,978**	**24,738**	**(14,371)**	**10,367**

Notes to the Annual Financial Statements

17. LEASES AND RIGHT-OF-USE ASSETS (CONTINUED)

Company	2021			2020		
	Cost / Valuation	Accumulated depreciation	Carrying value	Cost / Valuation	Accumulated depreciation	Carrying value
	R'000	R'000	R'000	R'000	R'000	R'000
Right-of-use assets - Vehicles	6,651	(1,342)	5,309	5,681	-	5,681
Right-of-use assets - Equipment	17,720	(15,508)	2,212	17,469	(13,792)	3,677
Total	**24,371**	**(16,850)**	**7,521**	**23,150**	**(13,792)**	**9,358**

Reconciliation of Right of use asset - Group - Year ended 31 March 2021

	Opening balance	Additions	Depreciation	Remeasurements	Total
	R'000	R'000	R'000	R'000	R'000
Right-of-use assets - Vehicles	6,504	1,186	(1,517)	(45)	6,128
Right-of-use assets - Equipment	3,677	251	(1,716)	-	2,212
Right-of-use assets - Buildings	186	657	(206)	1	638
	10,367	**2,094**	**(3,439)**	**(44)**	**8,978**

Reconciliation of Right of use asset - Group - Year ended 31 March 2020

	Opening balance	First Time adoption of IFRS16	Additions	Depreciation	Fair value adjustments	Total
	R'000	R'000	R'000	R'000	R'000	R'000
Right-of-use assets - Vehicles	-	588	6,081	(165)	-	6,504
Right-of-use assets - Equipment	-	16,825	645	(13,793)	-	3,677
Right-of-use assets - Buildings	-	386	-	(202)	2	186
	-	**17,799**	**6,726**	**(14,160)**	**2**	**10,367**

Reconciliation of Right of use asset - Company - Year ended 31 March 2021

	Opening balance	Additions	Depreciation	Total
	R'000	R'000	R'000	R'000
Right-of-use assets - Vehicles	5,681	970	(1,342)	5,309
Right-of-use assets - Equipment	3,677	251	(1,716)	2,212
	9,358	**1,221**	**(3,058)**	**7,521**

Reconciliation of Right of use asset - Company - Year ended 31 March 2020

	Opening balance	First time adoption of IFRS 16	Additions	Depreciation	Impairments	Total
	R'000	R'000	R'000	R'000	R'000	R'000
Right-of-use assets - Vehicles	-	1,019	5,681	(340)	(679)	5,681
Right-of-use assets - Equipment	-	4,650	645	(1,548)	(70)	3,677
	-	**5,669**	**6,326**	**(1,888)**	**(749)**	**9,358**

Notes to the Annual Financial Statements

17. LEASES AND RIGHT-OF-USE ASSETS (CONTINUED)

Details pertaining to leasing arrangements, where the group is lessee are presented below:

The Group adopted IFRS 16 for the first time in the previous financial period. Comparative figures have been accounted for in accordance with IAS 17 and accordingly, any assets recognised under finance leases in accordance with IAS 17 for the comparative have been recognised as part of property, plant and equipment. The information presented in this note for right-of-use assets therefore only includes the current period.

IFRS 16 Leases

Necsa adopted IFRS 16 Leases with effect from 1 April 2019. The new standard replaces IAS 17 Leases, IFRIC 4 Determining whether an arrangement contains a lease, SIC-15 Operating leases – Incentives and SIC-27 Evaluating the substance of transactions involving the legal form of a lease.

Necsa entered into a lease arrangement as a lessee for the following:

Electronic office equipment- Ownership transfers at the end of the lease term to Necsa.

Vehicles leased from AVIS

There are no unguaranteed residual values of assets leased under leases at the end of the reporting period.

As Lessee

As a lessee, Necsa previously classified leases as operating or finance lease based on its assessment of whether the lease transferred all the risks incidental to ownership of the underlying assets. IFRS 16 introduces a single, on-balance sheet lease accounting model for lessees. A lessee is required to recognise a right-of-use asset representing its right to use the underlying leased asset and a lease liability representing its obligation to make lease payments.

Approach

IFRS 16 can be applied using either a retrospective approach or a modified retrospective approach with optional practical expedients for lessees. Necsa has applied the modified retrospective approach on adoption of IFRS 16 and as a result comparative information will not be restated.

The following practical expedients were applied when applying IFRS 16;

- Applied the exemption not to recognise right-of-use asset and liabilities for leases with of low-value assets and
- Applied the exemption not to recognise right-of-use asset and liabilities for leases with lease terms of 12 months or less

Existing leases with a remaining period of 12 months will be reported as short-term leases

The right of use asset for all existing leases will be measured using the carrying amount of the lease asset and liability under IAS 17.

Assets and liabilities arising from a lease are initially measured on a present value basis. Lessees are required to separately recognise the interest expense on the lease liability and the depreciation expense on the right-of-use of the asset.

Lessor

IFRS 16 substantially carries forward the lessor accounting requirements in IAS 17. Accordingly, a lessor continues to classify its leases as operating or finance leases, and to account for those two types of leases differently.

Impact

The average lease term for motor vehicles and electronic office equipment is 40 months and the effective borrowing rate was 7% (2020: 13%). Interest rates are linked to prime at contract date and no arrangements have been entered into for contingent rent.

The impact of COVID-19 was taken into account when right of use assets were assessed for indications to impairment. There was no impact on the valuation of right of use assets due to the COVID-19 pandemic

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

17. LEASES AND RIGHT-OF-USE ASSETS (CONTINUED)

Other disclosures

Interest expense on lease liabilities	203	92	76	323	510	361
Leases of low value items included in operating expenses	224	252	-	-	-	-
	427	**344**	**76**	**323**	**510**	**361**
Lease liabilities						
Minimum lease payments due						
- within one year	1,873	4,135	3,645	2,284	3,571	2,093
- in second to fifth year inclusive	2,851	2,501	4,164	1,082	2,077	1,499
- later than five years	-	-	-	-	-	-
	4,724	6,636	7,809	3,366	5,648	3,592
less: future finance charges	(374)	(506)	(920)	(276)	(396)	(367)
	4,350	**6,130**	**6,889**	**3,090**	**5,252**	**3,225**
Present value of minimum lease payments due						
- within one year	1,704	3,967	3,070	2,169	3,411	1,840
- in second to fifth year inclusive	2,646	2,163	3,819	888	1,841	1,385
- later than five years	-	-	-	-	-	-
	4,350	**6,130**	**6,889**	**3,057**	**5,252**	**3,225**
Non-current liabilities	2,646	2,163	3,819	888	1,841	1,385
Current liabilities	1,704	3,967	3,070	2,169	3,411	1,840
	4,350	**6,130**	**6,889**	**3,057**	**5,252**	**3,225**

* Figures restated - refer to note 38

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

2021 for the year ending 31 March 2021. 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.

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 7dependants 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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

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 2021 are R1,380 per month for a single member and R2,274 for a married member. The child dependant subsidy for 2021 is R577 per month.

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 2021 are R771 per month for a single member and R1,400 per month for a married member. The additional Rand amounts for members on the Essential Comprehensive option in 2021 are R781 for a single member and R1,413 per month 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 2021 is R668 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 R258 for 2021, irrespective of marital status.

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	A decrease in the bond yields used to determine the discount rate will increase the employer's reported post- and CPI 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.

Company developments:

The most recent actuarial valuation of the plan assets and the present value of the defined benefit obligation were carried out at 31 March 2021 by Mr. Sean Neethling, 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. MCA also undertook the previous valuation for NECSA and its two major subsidiaries, NTP Radioisotopes and Pelchem as at 31 March 2021.

Momentum Consultants and Actuaries ('MCA') 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 2020. An expense for the 2020/21 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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

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		
	2021	2020	2019
Discount rate (D)	11.00 %	12.50 %	10.00 %
Consumer Price Index (CPI)*	6.90 %	7.10 %	6.50 %
Subsidy contribution increase rate (H)	6.90 %	7.10 %	6.50 %
Net discount rate ((1+D)/(1+H)-1)	3.84 %	5.04 %	3.29 %
Expected return in Plan Assets	11.00 %	12.50 %	10.00 %

* This is the market expectation of long-term CPI.

We have estimated the total duration of the liability to be 9.7 years, based on the previous valuation results.

The rates derived are based on prevailing yields as at 31 March 2021. 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 9.75 years to derive the discount rate of 10.80% per annum.

Consumer price index inflation

The risk free market expectation of long-term Consumer Price Inflation (CPI) of 6.20% 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.

Demographic assumptions:	Valuation at		
	2021	2020	2019
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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

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		
	2021	2020	2019
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).

Withdrawal rates

Example at stated age	Withdrawal rates
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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

	Group			Company		
	2021	2020	2019	2021	2020	2019
	R'000	R'000	R'000	R'000	R'000	R'000
Reconciliation of assets and liabilities recognised on the Statement of financial position						
Present value of funded obligations	342,002	295,409	370,430	295,614	273,823	325,403
Fair value of plan assets	(28,557)	(4,903)	(30,312)	(9,229)	(4,903)	(10,562)
Present value of obligations in excess of Plan Assets	**313,445**	**290,506**	**340,118**	**286,385**	**268,920**	**314,841**
Net liability/(asset) in statement of financial position	**313,445**	**290,506**	**340,118**	**286,385**	**268,920**	**314,841**
Non-current assets	9,229	4,903	10,562	9,229	4,903	10,562
Non-current liabilities	(297,469)	(270,281)	(326,885)	(271,699)	(249,741)	(301,608)
Current liabilities	(25,205)	(25,128)	(23,795)	(23,915)	(24,082)	(23,795)
	(313,445)	**(290,506)**	**(340,118)**	**(286,385)**	**(268,920)**	**(314,841)**
Reconciliation of net liability recognised on the statement of financial position						
Opening balance	290,507	340,118	379,161	268,921	314,841	350,151
Interest cost	37,178	35,706	35,672	32,632	31,293	31,254
Current service cost	2,364	3,439	4,420	1,847	2,676	3,397
Expected return on Plan Assets	(4,998)	(4,902)	(4,695)	(3,081)	(2,969)	(2,825)
Net annual cost recognised in profit or loss	**34,544**	**34,243**	**35,397**	**31,398**	**31,000**	**31,826**
Actuarial (gains)/loss recognised through OCI	25,174	(48,088)	(39,722)	21,539	(42,439)	(33,627)
Expected employer benefit payments	23,452	(34,401)	(25,863)	25,543	(24,956)	(24,315)
Benefit payments from Plan Assets	(24,560)	33,438	25,057	(25,543)	24,956	24,315
Employer prefunding / additional contributions	(35,672)	(34,804)	(33,912)	(35,473)	(34,482)	(33,489)
Closing balance	**313,445**	**290,506**	**340,118**	**286,385**	**268,920**	**314,861**
Reconciliation of present value of obligations in excess of Plan Assets						
Opening balance	290,507	340,118	379,161	268,921	314,841	350,131
Interest cost	37,178	35,706	35,672	32,632	31,293	31,254
Current service cost	2,364	3,439	4,420	1,847	2,676	3,397
Expected return on Plan Assets	(4,998)	(4,902)	(4,695)	(3,081)	(2,969)	(2,825)
Actuarial (gain)/loss	25,174	(48,088)	(39,722)	21,539	(42,439)	(33,627)
Expected employer benefit payments form Plan Assets	26,526	25,804	25,057	25,543	24,956	24,315
Expected employer benefit payments	(27,634)	(26,767)	(25,863)	(25,543)	(24,956)	(24,315)
Employer prefunding contributions	(35,672)	(34,804)	(33,912)	(35,473)	(34,482)	(33,489)
Closing balance	**313,445**	**290,506**	**340,118**	**286,385**	**268,920**	**314,841**

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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

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	321,924	295,614	272,852
Employer's service and interest cost	33,276	33,156	32,996

Therefore, a 1% increase in the discount rate assumption will result in a 7.7% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in an 8.9% 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	272,260	295,614	322,219
Employer's service and interest cost	30,309	33,156	36,424

Therefore, a 1% increase in the inflation rate assumption will result in an 9.0% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 7.9% decrease in the accrued liability.

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) – 3*	Valuation basis	PA(90) – 1*
	R'000	R'000	R'000
Employer's accrued liability	304,778	295,614	286,450
Employer's service and interest cost	34,211	33,156	32,101

*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 3.1% increase in accrued liability. Similarly, a one year upward-rating in the post-retirement mortality assumption will result in a 3.1% 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	299,753	295,614	290,884
Employer's service and interest cost	33,567	33,156	32,504

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

Therefore, an increase of 1 year in the average retirement age assumption will result in a 1.6% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 1.4% 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	374,356	342,002	314,257
Employer's service and interest cost	39,055	38,686	38,303

Therefore, a 1% increase in the discount rate assumption will result in a 7.4% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in a 8.6% 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	313,560	342,002	374,703
Employer's service and interest cost	35,196	38,686	42,729

Therefore, a 1% increase in the inflation rate assumption will result in a 9.6% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 8.4% decrease in the accrued liability.

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) – 3*	Valuation basis	PA(90) – 1*
	R'000	R'000	R'000
Employer's accrued liability	352,301	342,002	331,689
Employer's service and interest cost	39,879	38,686	37,493

*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 3.0% increase in accrued liability. Similarly, a one year upward-rating in the post-retirement mortality assumption will result in a 3.0% 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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000
Employer's accrued liability	347,524	342,002	336,019
Employer's service and interest cost	39,244	38,686	37,873

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 1.6% 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 RADIOISOTOPES

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	21,725	19,328	17,334
Employer's service and interest cost	2,423	2,329	2,244

Therefore, a 1% increase in the discount rate assumption will result in a 10.3% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in a 12.4% 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	17,294	19,328	21,743
Employer's service and interest cost	2,068	2,329	2,641

Therefore, a 1% increase in the inflation rate assumption will result in a 12.5% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 10.5% decrease in the accrued liability.

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) – 3*	Valuation basis	PA(90) – 1*
	R'000	R'000	R'000
Employer's accrued liability	19,837	19,328	18,813
Employer's service and interest cost	2,392	2,329	2,267

*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 2.6% 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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000
Employer's accrued liability	19,984	19,328	18,730
Employer's service and interest cost	2,398	2,329	2,257

Therefore, an increase of 1 year in the average retirement age assumption will result in a 3.1% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 3.4% increase in the accrued liability.

Pelchem

Discount rate

The table shows the impact of a 1% increase and decrease in discount rate.

	1% decrease	Valuation basis	1% increase
	R'000	R'000	R'000
Employer's accrued liability	30,707	27,060	24,071
Employer's service and interest cost	3,356	3,201	3,063

Therefore, a 1% increase in the discount rate assumption will result in a 11% decrease in the accrued liability. Similarly, a 1% decrease in the discount rate assumption will result in a 13.5% increase in the accured 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 ilability	24 006	27 060	30 741
Employer's service and interest cost	2 819	3 201	3 664

Therefore, a 1% increase in the inflation rate assumption will result in a 13.6% increase in the accrued liability. Similarly, a 1% decrease in the inflation rate assumption will result in a 11.3% decrease in the accrued liability.

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) – 3*	Valuation basis	PA(90) – 1*
	R'000	R'000	R'000
Employer's accrued liability	27 686	27 060	26 426
Employer's service and interest cost	3 276	3 201	3 125

*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 2.3% increase in accrued liability. Similarly, a one year upward-rating in the post-retirement mortality assumption will result in a 2.3% decrease in the accrued liabilty.

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.

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

	1 year younger	Valuation basis	1 year older
	R'000	R'000	R'000
Employer's accrued liability	27,787	27,060	26,405
Employer's service and interest cost	3,279	3,201	3,112

Therefore, an increase of 1 year in the average retirement age assumption will result in a 2.4% decrease in the accrued liability. Similarly, a decrease of 1 year in the average retirement age assumption will result in a 2.7% 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, 1 May 2018, 1 May 2019 and 1 May 2020.

As at 31 March 2021, the policy value of the Plan Asset provided by the insurer was R3,197,585.

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 2021	31 March 2020	31 March 2019
	R'000	R'000	R'000
Guaranteed account	2,980	5,729	5,397
Growth account	218	64	114
Market value of Plan Asset	**3,198**	**5,793**	**5,511**

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 2.95% and another 8.75% 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 2021	31 March 2020	31 March 2019
	R'000	R'000	R'000
Guaranteed account	9,011	4,839	10,448
Growth account	218	64	114
Fair value of Plan Asset	**9,229**	**4,903**	**10,562**

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

The table below shows the reconciliation of the Plan Assets from opening to closing balance:

Reconciliation of Plan Assets	31 March 2021	31 March 2020	31 March 2019
	R'000	R'000	R'000
Opening balance of Plan Asset	4,903	10,562	13,198
Expected benefit payments from Plan Asset	(25,543)	(24,956)	(24,315)
Additional contributions	35,473	34,482	33,489
Expected return on Plan Asset	3,081	2,969	2,825
Expected asset value as at end of year	17,914	23,057	25,197
Actuarial gains/(losses)	(8,685)	(18,154)	(14,635)
Closing balance of Plan Asset	**9,229**	**4,903**	**10,562**

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.

NTP Radioisotopes:

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 2021, the policy value of the Plan Asset provided by the insurer was R20,321,034

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 2021	31 March 2020	31 March 2019
	R'000	R'000	R'000
Guaranteed account	13,448	12,059	11,812
Growth account	6,873	7,053	9,216
Market value of Plan Asset	**20,321**	**19,112**	**21,028**

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 2021	31 March 2020	31 March 2019
	R'000	R'000	R'000
Fair value of Plan Assets	19,328	15,828	19,750
	-	-	-
Fair value of Plan Asset	**19,328**	**15,828**	**19,750**

Notes to the Annual Financial Statements

18. RETIREMENT BENEFITS (CONTINUED)

The table below shows the reconciliation of the Plan Assets from opening to closing balance:

Reconciliation of Plan Assets	31 March 2021	31 March 2020	31 March 2019
	R'000	R'000	R'000
Opening balance of Plan Asset	15,828	19,750	21,379
Expected benefit payments from Plan Asset	(983)	(848)	(742)
Contribution from growth account for current service costs	199	322	423
Expected return on Plan Asset	1,917	1,933	1,870
Expected asset value as at end of year	16,961	21,157	22,930
Actuarial gains/(losses)	2,367	(5,329)	(3,180)
Closing balance of Plan Asset	**19,328**	**15,828**	**19,750**

19. DEFERRED INCOME

Government grants for future expenditure:

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000
Non-current liabilities	608,634	583,999	539,976	608,634	583,999	539,976
Current liabilities	276,421	125,940	23,442	276,421	125,940	23,442
	885,055	**709,939**	**563,418**	**885,055**	**709,939**	**563,418**
At 1 April 2020	709,939	562,651	579,947	709,939	562,651	579,947
Received during the year	816,886	774,124	592,332	816,886	774,124	592,332
Released to the statement of comprehensive income	(663,830)	(628,056)	(600,087)	(663,830)	(628,056)	(600,087)
Other movements (Note 1)	22,060	1,220	(8,774)	22,060	1,220	(8,774)
At 31 March 2021	**885,055**	**709,939**	**563,418**	**885,055**	**709,939**	**563,418**

* Figures restated - refer to note 38

(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 41, 42 and 43 for nature and detail of the government grant received relating to decommissioning and decontamination costs.

20. PROVISIONS

Reconciliation of provisions - Group - 2021

	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	594,770	173,373	(29,334)	(28,278)	1,651	712,182
Employee benefit accruals	76,074	84,045	(26,162)	-	-	133,957
	670,844	**257,418**	**(55,496)**	**(28,278)**	**1,651**	**846,139**

Notes to the Annual Financial Statements

20. PROVISIONS

Reconciliation of provisions - Group - 2020

	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	583,795	89,393	(78,405)	(1,328)	1,315	594,770
Employee benefit accruals	72,625	75,472	(71,577)	(446)	-	76,074
	656,420	**164,865**	**(149,982)**	**(1,774)**	**1,315**	**670,844**

Reconciliation of provisions - Group - 2019

	Opening balance	Additions	Utilised during the year	Change in discount factor	Total
	R'000	R'000	R'000	R'000	R'000
Decommissioning and waste disposal	511,580	95,606	(24,606)	1,215	583,795
Employee benefit accruals	91,904	60,368	(79,647)	-	72,625
	603,484	**155,974**	**(104,253)**	**1,215**	**656,420**

Reconciliation of provisions - Company - 2021

	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	502,932	173,266	(58,379)	(26,330)	-	591,489
Employee benefit accruals	51,485	37,013	(2,185)	-	-	86,313
	554,417	**210,279**	**(60,564)**	**(26,330)**	**-**	**677,802**

Reconciliation of provisions - Company - 2020

	Opening balance	Additions	Utilised during the year	Reclassified during the year	Change in discount factor	Total
	R'000	R'000	R'000	R'000	R'000	R'000
Decommissioning and waste disposal	464,373	38,559	-	-	-	502,932
Employee benefit accruals	48,569	51,485	(48,569)	-	-	51,485
	512,942	**90,044**	**(48,569)**	**-**	**-**	**554,417**

Reconciliation of provisions - Company - 2019

	Opening balance	Additions	Utilised during the year	Total
	R'000	R'000	R'000	R'000
Decommissioning and waste disposal	424,005	52,473	(12,105)	464,373
Employee benefit accruals	-	48,569	-	48,569
	424,005	**101,042**	**(12,105)**	**512,942**

Notes to the Annual Financial Statements

20. PROVISIONS

Non-current liabilities	712,182	594,770	583,795	591,489	502,932	464,373
Current liabilities	133,957	76,074	72,625	86,313	51,485	48,569
	846,139	**670,844**	**656,420**	**677,802**	**554,417**	**512,942**

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:

i) 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.

ii) 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.

iii) 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.

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.

The impact of COVID-19 was taken into account when determining the fair value of provisions There was no impact on the fair value of provisions due to the COVID-19 pandemic.

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

21. TRADE AND OTHER PAYABLES

Financial Instruments						
Trade payables	110,275	71,390	322,330	15,895	7,862	16,134
Amounts received in advance	13,405	10,784	3,532	1	-	1
Funds held on behalf of NRWDI	34	34	34	-	-	-
Accrued expenses	42,782	29,149	150,419	48,407	22,137	19,550
Payroll accruals	16,599	15,222	14,247	8,053	8,261	8,627
Other payables	60,889	98,271	48,806	44,801	98,354	15,564
VAT	15,297	-	-	14,873	-	5,696
	259,281	**224,850**	**539,368**	**132,030**	**136,614**	**65,572**
Fair value of trade and other payables						
Trade and other payables	259,281	224,850	539,368	132,030	136,614	65,572

* Figures restated - refer to note 38

The carrying amounts of trade and other payables are considered to be the same as their fair values, due to their short-term nature.

Trade and other payables are initially measured at fair value and are subsequently measured at amortised cost using the effective interest rate method.

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.

The impact of COVID-19 was taken into account when determining the fair value of trade payables. There was no impact on the fair value of trade payables due to the COVID-19 pandemic.

Included in Other payables are sundry creditors and other miscellaneous items, of which outstanding cheque deposits form a big part of the total.

Please refer to note 38 as trade and other payables were restated due to a prior year error.

22. FINANCIAL ASSETS BY CATEGORY

The accounting policies for financial instruments have been applied to the line items below:

Group - 2021

	Loans and receivables	Fair value through profit or loss	Fair value through other comprehensive income	Total
	R'000	R'000	R'000	R'000
Other financial assets	460,790	266,024	1,055	727,869
Cash and cash equivalents	169,733	-	-	169,733
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	345,697	-	-	345,697
	976,220	**266,024**	**1,055**	**1,243,299**

Notes to the Annual Financial Statements

22. FINANCIAL ASSETS BY CATEGORY (CONTINUOUS)

Group - 2020

	Loans and receivables	Fair value through profit or loss	Fair value through other comprehensive income	Total
	R'000	R'000	R'000	R'000
Other financial assets	339,011	216,672	881	556,564
Cash and cash equivalents	202,912	-	-	202,912
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	288,928	-	-	288,928
	830,851	**216,672**	**881**	**1,048,404**

Group - 2019

	Loans and receivables	Fair value through profit or loss	Fair value through other comprehensive income	Total
Other financial assets	315,681	193,939	1,452	511,072
Cash and cash equivalents	374,802	-	-	374,802
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	618,978	-	-	618,978
	1,309,461	**193,939**	**1,452**	**1,504,852**

Company - 2021

	Loans and receivables	Fair value through profit or loss	Fair value through other comprehensive income	Total
	R'000	R'000	R'000	R'000
Loans to (from) group companies	(49,106)	-	-	(49,106)
Other financial assets	458,054	263,875	1,026	722,955
Cash and cash equivalents	21,151	-	-	21,151
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	181,833	-	-	181,833
	611,932	**263,875**	**1,026**	**876,833**

Company - 2020

	Loans and receivables	Fair value through profit or loss	Fair value through other comprehensive income	Total
	R'000	R'000	R'000	R'000
Loans to (from) group companies	38,558	-	-	38,558
Other financial assets	337,053	216,672	856	554,581
Cash and cash equivalents	16,630	-	-	16,630
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	58,488	-	-	58,488
	450,729	**216,672**	**856**	**668,257**

Notes to the Annual Financial Statements

22. FINANCIAL ASSETS BY CATEGORY (CONTINUOUS)

Company - 2019

	Loans and receivables	Fair value through profit or loss	Fair value through other comprehensive income	Total
Loans to (from) group companies	7,819	-	-	7,819
Other financial assets	313,941	193,939	1,416	509,296
Cash and cash equivalents	21,834	-	-	21,834
Trade and other receivables (excl. prepayments, deposits and VAT receivable)	95,938	-	-	95,938
	439,532	**193,939**	**1,416**	**634,887**

23. FINANCIAL LIABILITIES BY CATEGORY

The accounting policies for financial instruments have been applied to the line items below:

Group - 2021

	Financial liabilities at amortised cost	Fair value through profit or loss	Total
	R'000	R'000	R'000
Other financial liabilities	2,043	10,895	12,938
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	231,085	-	231,085
Bank overdraft	14,004	-	14,004
Lease Liabilities	4,350	-	4,350
	251,482	**10,895**	**262,377**

Group - 2020

	Financial liabilities at amortised cost	Fair value through profit or loss - held for trading	Total
	R'000	R'000	R'000
Other financial liabilities	5,010	11,543	16,553
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	214,032	-	214,032
Bank overdraft	23,909	-	23,909
Lease Liabilities	6,130	-	6,130
	249,081	**11,543**	**260,624**

Notes to the Annual Financial Statements

23. FINANCIAL LIABILITIES BY CATEGORY (CONTINUED)

Group - 2019

	Financial liabilities at amortised cost	Fair value through profit or loss - held for trading	Total
Other Financial Liabilities	4,408	1,963	6,371
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	535,802	-	535,802
Bank overdraft	45,959	-	45,959
Other	6,889	-	6,889
	593,058	**1,963**	**595,021**

Company - 2021

	Financial liabilities at amortised cost	Total
	R'000	R'000
Other financial liabilities	10,895	10,895
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	117,156	117,156
Lease Liabilities	3,057	3,057
	128,482	**131,108**

Company - 2020

	Financial liabilities at amortised cost	Total
	R'000	R'000
Other financial liabilities	83	83
Trade and other payables (excl. amounts received in advance, deferred grants and VAT payable)	136,614	136,614
Bank overdraft	188	188
Lease Liabilities	5,252	5,252
	142,137	**142,137**

Company - 2019

	Financial liabilities at amortised cost	Total
Other financial liabilities	1,118	1,118
Trade and other payables	59,875	59,875
Bank overdraft	20,000	20,000
Lease Liabilities	3,225	3,225
	84,218	**84,218**

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
	R'000	R'000	R'000	R'000	R'000	R'000

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	728,335	615,056	606,166	715,772	602,565	593,963

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. FINANCIAL ASSETS MEASURED AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME RESERVE

The fair value through other comprehensive income reserve comprises all fair value adjustments on financial instruments designated as financial assets measured at fair value through other comprehensive income . When an asset or liability is derecognised, the fair value adjustment relating to that asset or liability is transferred to retained earnings/accumulated loss.

Financial assets measured at fair value through other comprehensive income	809	196	665	332	191	651

26. REVENUE

Sale of goods	978,125	1,097,713	1,504,922	361,581	413,820	433,363
Rendering of services	8,500	(27,632)	19,130	-	-	-
Government grants	663,830	628,056	601,189	663,830	628,056	600,087
Other grants	25,380	94,445	25,116	25,380	94,445	38,920
	1,675,835	**1,792,582**	**2,150,357**	**1,050,791**	**1,136,321**	**1,072,370**

IFRS15 Disclosure

The Group derives revenue from the transfer of goods and services over time and at a point in time in the following major product lines:

Revenue	984,627	1,060,151	1,519,911	361,581	413,820	433,363
-Services to External Tenants	6,465	8,491	3,270	6,465	8,491	4,256
-Sales: Local	291,733	481,861	554,715	75,897	128,025	158,214
-Sales: Local - Ir-192	(3,338)	(4,718)	331,471	-	-	-
-Sales: Foreign	689,767	574,517	630,455	9,846	27,012	29,663
-Sales: Inter Group sales	-	-	-	269,374	250,292	241,230
Revenue from Grants	691,208	732,431	630,446	689,210	722,501	639,007
Government Grants	663,830	628,056	601,189	663,830	628,056	600,087
Other Grants	27,378	104,375	29,257	25,380	94,445	38,920
	1,675,835	**1,792,582**	**2,150,357**	**1,050,791**	**1,136,321**	**1,072,370**
The amount included in revenue arising from government grants is as follows:						
Operating activities	521,768	511,015	493,469	521,768	511,015	492,367
Decommissioning of strategic plants	124,696	77,848	77,165	124,696	77,848	77,165
LEU Fuel and conversion	6,390	28,625	19,967	6,390	28,625	19,967
Security	10,976	10,406	9,851	10,976	10,406	9,851
Deferred R&D Safari Grant Used	-	8	49	-	8	49
Deferred MTEF Grant utilised for Activities	-	154	688	-	154	688
	663,830	**628,056**	**601,189**	**663,830**	**628,056**	**600,087**

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

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 Minerals, Resource and 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.

Please refer to note 38 as revenue was restated due to a prior year error.

27. OPERATING PROFIT (LOSS)

Operating loss for the year is stated after charging (crediting) the following, amongst others:

Income from subsidiaries (other than investment income)						
Dividends	-	-	-	-	-	20,000
Leases						
Short-term and low value lease expenses						
Premises	350	3,515	417	-	179	164
Motor vehicles	2,448	3,832	4,770	2,448	3,832	4,770
Equipment	4,596	5,391	8,169	4,455	4,562	7,881
Lease rentals	-	-	45,944	-	-	45,900
Short-term and low value lease other	98	103	-	-	11	-
	7,492	**12,841**	**59,300**	**6,903**	**8,584**	**58,715**
Contingent rentals on short-term and low value leases						
Short-term and low value lease payments	(48)	17	(63)	-	-	-
Short-term and low value lease payments other	34	4	22	-	-	-
	(14)	**21**	**(41)**	**-**	**-**	**-**
Total short-term and low value lease charges	**7,478**	**12,862**	**59,259**	**6,903**	**8,584**	**58,715**
Less: Short-term and low value lease payment charges included in cost of merchandise sold and inventories	2,402	(670)	(235)	-		-
Total short-term and low value lease charges expensed	**9,880**	**12,192**	**59,024**	**6,903**	**8,584**	**58,715**
Auditor's remuneration - external						
Audit fees	7,209	18,946	17,546	(1,773)	8,886	12,723
Auditor's remuneration - internal	**2,054**	**1,805**	**738**	**-**	**-**	**-**
Other						
Profit on sale of other financial assets	-	-	-	-	-	4,156
Impairment of subsidiary	-	-	3,389	-	-	-
Profit (loss) on exchange differences	-	-	-	-	8,665	2,675
Employee costs	1,086,366	1,041,345	1,085,250	782,853	774,204	777,489

Notes to the Annual Financial Statements

Consulting and professional fees	35,473	48,799	64,566	18,163	14,022	38,339
Impairment of inventory	13,668	824	6,491	979	1,066	6,130
Repairs and maintenance	6,282	18,844	11,215	5,312	15,832	9,692
Research and development costs	21,500	11,812	3,520	-	-	-
Amortisation on Intangible assets	6,578	5,826	5,702	671	-	-
PPE impairment / reversal of impairment	1,720	1,344	27,090	-	-	-
Impairment losses	-	-	3,310	-	-	-

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000
27. OPERATING PROFIT (LOSS) (CONTINUED)						
Depreciation and amortisation						
Depreciation of property, plant and equipment	92,963	89,161	80,994	74,954	69,802	58,647
Depreciation of right of use assets	3,439	14,160	-	3,058	1,888	-
Amortisation of intangible assets	6,578	5,826	5,702	671	-	-
Total depreciation and amortisation	**102,980**	**96,614**	**91,139**	**78,683**	**69,935**	**58,697**
Less: Depreciation included in cost of merchandise sold and inventories	(14,051)	(13,795)	(17,418)	-	-	-
Total depreciation and amortisation expensed	**88,929**	**82,819**	**73,721**	**78,683**	**69,935**	**58,697**
Rental income						
Operating lease rental income						
Investment property	(7,440)	(6,235)	6,588	5,667	7,114	4,719
28. INVESTMENT INCOME						
Dividend income						
Subsidiaries - Local	-	-	-	-	-	20,000
Unlisted investments - Local	573	798	814	-	-	-
Financial assets measured at fair value through other comprehensive income	383	546	489	383	546	489
Total dividend income	**956**	**1,344**	**1,303**	**383**	**546**	**20,489**
Interest income						
From investments in financial assets:						
Bank	42,383	50,621	76,024	33,539	37,704	34,743
Interest charged on trade and other receivables	464	1,486	5,190	343	1,424	5,081
Fair value adjustments	(403)	(1,165)	(9,650)	-	-	(12,042)
Interest received from SARS	-	-	(2,538)	-	-	-
Stage 1 decommissioning and decontamination	189,813	229,273	214,347	189,813	229,127	213,589
Local listed investment income	710	828	6,813	-	-	-
Total interest income	**232,967**	**281,043**	**290,186**	**223,695**	**268,255**	**241,371**
Total investment income	**233,923**	**282,387**	**291,489**	**224,078**	**268,801**	**261,860**

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

29. FINANCE COSTS

Group	-	-	-	1,993	3,082	3,381
Non-current borrowings	22	556	-	-	-	-
Interest on Trade and other payables	65	81	41	5	54	-
Interest on lease liabilities: Subsidiaries	203	92	152	-	-	-
Bank overdraft	3,973	5,131	11,253	-	104	1,300
Interest on lease liabilities	323	510	361	323	510	361
Finance cost on D&D provisions	191,139	229,610	142,050	191,139	229,610	140,835
Fair value adjustments (1)	(2,757)	487	138	-	-	163
Total finance costs	**192,968**	**236,467**	**153,995**	**193,460**	**233,360**	**146,040**

Necsa did not capitalise borrowing costs in the current or prior year presented.

(1) Fair value adjustments relate to imputed interest.

Please refer to note 38 as finance costs was restated due to a prior year error.

30. TAXATION

Major components of the tax expense (income)

Current						
Local income tax - current period	4,778	1,050	(1,939)	-	-	-
Local income tax - recognised in current tax for prior periods	-	502	91	-	-	-
Capital gains tax	-	-	336	-	-	-
Foreign income tax or withholding tax - current period	-	-	4,298	-	-	-
	4,778	**1,552**	**2,786**	**-**	**-**	**-**
Deferred						
Originating and reversing temporary differences	(8,011)	(14,609)	(8,088)	-	-	-
Arising from previously unrecognised tax loss / tax credit / temporary differences	15,886	(12,360)	(55,671)	-	-	-
Deferred tax prior year	(763)	(361)	(4,451)	-	-	-
Current tax prior year	-	(336)	-	-	-	-
	7,112	**(27,666)**	**(68,210)**	**-**	**-**	**-**
Total tax expense	**11,890**	**(26,114)**	**(65,423)**	**-**	**-**	**-**

Reconciliation of the tax expense

Reconciliation between accounting profit and tax expense.						
Accounting loss	(217,049)	(363,587)	(427,411)	(212,483)	(198,902)	(124,690)
Necsa accounting loss as reconciling item	197,719	196,786	146,357	197,719	196,786	146,357
Accounting loss after reconciling item	**(19,330)**	**(166,801)**	**(281,054)**	**(14,764)**	**(2,116)**	**21,667**
Tax at the applicable tax rate of 28% (2020: 28%)	(5,412)	(46,704)	(78,695)	-	-	-

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

30. TAXATION (CONTINUED)

Tax effect of adjustments on taxable income						
Permanent differences due to non-taxable income and non-deductible expenses	971	830	3,702	-	-	-
Other	41	-	-	-	-	-
Prior year - unknown	97	-	-	-	-	-
Capital gains tax	-	-	376	-	-	-
Under/(Over) provision of tax in prior year	-	(92)	74	-	-	-
Differences due to group transactions	-	1,674	(615)	-	-	-
Income from equity accounted investments	(715)	(176)	(144)	-	-	-
Wear & Tear timing difference	(445)	-	-	-	-	-
PRML Liability movement through OCI	1,533	-	-	-	-	-
Non-taxable income	(71)	(823)	-	-	-	-
Permanent differences	88	(212)	-	-	-	-
Prior period error	-	-	(3,889)	-	-	-
Tax losses	15,803	19,389	14,418	-	-	-
	11,890	**(26,114)**	**(64,773)**	**-**	**-**	**-**

* Figures restated - refer to note 38

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 - 2021

	Gross	Tax	Net
	R'000	R'000	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	(19,199)	(1,532)	(20,731)
Movements on revaluation			
Gains (losses) on property revaluation	113,279	-	113,279
Total items that will not be reclassified to profit (loss)	**94,080**	**(1,532)**	**92,548**
Items that may be reclassified to profit (loss)			
Exchange differences on translating foreign operations			
Exchange differences arising during the year	(373)	-	(373)
Financial assets measured at fair value through other comprehensive income adjustments			
Gains (losses) arising during the year	612	-	612
Financial assets measured at fair value through other comprehensive income	**612**	**-**	**612**
Total items that may be reclassified to profit (loss)	**239**	**-**	**239**
Total	**94,319**	**(1,532)**	**92,787**

Notes to the Annual Financial Statements

31. OTHER COMPREHENSIVE INCOME (CONTINUED)

Components of other comprehensive income - Group - 2020

	Gross	Tax	Net
	R '000	R '000	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	52,985	(1,263)	51,722
Movements on revaluation			
Gains (losses) on property revaluation	8,890	-	8,890
Total items that will not be reclassified to profit (loss)	**61,875**	**(1,263)**	**60,612**
Items that may be reclassified to profit (loss)			
Exchange differences on translating foreign operations			
Exchange differences arising during the year	417	-	417
	417	**-**	**417**
Financial assets measured at fair value through other comprehensive income			
Gains (losses) arising during the year	(471)	-	(471)
	(471)	**-**	**(471)**
Total items that may be reclassified to profit (loss)	**(54)**	**-**	**(54)**
Total	**61,821**	**(1,263)**	**60,558**

Components of other comprehensive income - Group - 2019

	Gross	Tax	Net
	R '000	R '000	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	45,436	(1,365)	44,071
Movements on revaluation			
Gains (losses) on property revaluation	67,540	-	67,540
Total items that will not be reclassified to profit (loss)	**112,976**	**(1,365)**	**111,611**
Items that may be reclassified to profit (loss)			
Exchange differences on translating foreign operations			
Exchange differences arising during the year	(1,051)	-	(1,051)
Financial assets measured at fair value through other comprehensive income			
Gains (losses) arising during the year	(53)	-	(53)
Total items that may be reclassified to profit (loss)	**(1,104)**	**-**	**(1,104)**
Total	**111,872**	**(1,365)**	**110,507**

Notes to the Annual Financial Statements

31. OTHER COMPREHENSIVE INCOME (CONTINUED)

Components of other comprehensive income - Company - 2021

	Gross	Tax	Net
	R'000	R'000	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	(21,791)	-	(21,791)
Movements on revaluation			
Gains (losses) on property revaluation	113,207	-	113,207
Total items that will not be reclassified to profit (loss)	**91,416**	**-**	**91,416**
Items that may be reclassified to profit (loss)			
Financial assets measured at fair value through other comprehensive income			
Gains (losses) arising during the year	141	-	141
Total	**91,557**	**-**	**91,557**

Components of other comprehensive income - Company - 2020

	Gross	Tax	Net
	R'000	R'000	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	45,921	-	45,921
Movements on revaluation			
Gains (losses) on property revaluation	6,846	-	6,846
Total items that will not be reclassified to profit (loss)	**52,767**	**-**	**52,767**
Items that may be reclassified to profit (loss)			
Financial assets measured at fair value through other comprehensive income			
Gains (losses) arising during the year	(460)	-	(460)
Total	**52,307**	**-**	**52,307**

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. 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.

Notes to the Annual Financial Statements

31. OTHER COMPREHENSIVE INCOME (CONTINUED)

Financial assets measured at fair value through other comprehensive income

Listed shares held by the Group that are traded in an active market are classified as financial assets measured at fair value through other comprehensive income and are stated at fair value at the end of each reporting period. Changes in the carrying amount of financial assets measured at fair value through other comprehensive income 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 financial assets measured at fair value through other comprehensive income 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 transferred to retained earnings/ accumulated loss.

Components of other comprehensive income - Company - 2019

	Gross	Tax	Net
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)			
Financial assets measured at fair value through other comprehensive income			
Gains (losses) arising during the year	(47)	-	(47)
Total	**104,051**	**-**	**104,051**

32. CASH USED IN OPERATIONS

Loss before taxation	(299,983)	(277,576)	(186,575)	(212,483)	(198,902)	(124,690)
Adjustments for:						
Profit/ (Loss) on sale of assets	-	-	-	26	799	38
Profit/(Loss) on sale of other financial assets	-	-	-	-	-	(4,156)
Gains on foreign exchange	-	-	-	-	(8,665)	(2,675)
Dividend income	(956)	(1,344)	(1,303)	(383)	(546)	(20,489)
Interest income	(43,154)	(51,770)	(75,839)	(33,882)	(39,128)	(27,782)
Finance costs	1,303	6,255	11,432	1,998	3,723	4,844
Fair value (gains) losses	(19,124)	7,010	(3,733)	(19,124)	7,010	(10,042)
Impairment loss or reversal on PPE	1,720	1,344	27,090	-	(2,150)	-
Movements in retirement benefit assets and liabilities	2,179	1,996	(1,117)	(4,326)	-	2,636
Amortisation: Decommissioning and decontamination	-	-	-	4,347	737	-
Amortisation of intangible assets	6,578	5,825	5,702	671	-	-
PPE: Depreciation and other changes	93,813	96,254	80,994	74,953	69,799	58,696
Right of use assets: Depreciation, fair value adjustments and remeasurements	3,483	14,158	-	3,058	1,888	-
Movements in assets and liabilities from discontinuing operations	(601)	3,089	(3,153)	-	-	-
Movements in provisions	175,295	14,424	46,581	123,385	41,475	33,384
Income from associates	(2,271)	(594)	(514)	-	-	-
Other non-cash flow movements	4,346	4,090	(115,249)	-	3,351	(105,490)
Short-term and low value lease payments	12,841	12,192	59,024	-	190	49,428

Notes to the Annual Financial Statements

Lease interest	526	602	513	323	510	361
Changes in working capital:						
Inventories	(7,247)	(57,093)	(29,021)	11,693	(23,798)	20,252
Trade and other receivables	(59,544)	309,451	(173,771)	(123,714)	37,870	21,234
Prepayments	(55,039)	5,421	49,835	(46,272)	5,839	49,973
Trade and other payables	34,443	(314,526)	72,707	(4,583)	71,041	(23,845)
Amounts Received in Advance	112,671	4,467	(110,426)	81,633	(39,672)	(32,098)
	(38,721)	**(216,325)**	**(346,823)**	**(142,680)**	**(68,629)**	**(110,421)**

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R '000	R '000	R '000	R '000	R '000	R '000

33. TAX (PAID) REFUNDED

Balance at beginning of the year	12,917	15,429	25,790	-	-	-
Total tax for the year recognised in profit or loss	(11,890)	26,114	64,773	-	-	-
Movement in deferred tax	5,608	(26,723)	(80,172)	-	-	-
Balance at end of the year	(9,501)	(12,917)	(15,429)	-	-	-
	(2,866)	**1,903**	**(5,038)**	**-**	**-**	**-**

34. COMMITMENTS

Authorised capital expenditure

Already contracted for but not provided for

• Property, plant and equipment	8,188	22,644	24,356	5,739	13,388	14,617
• Investment property	-	-	19	-	-	-
• Open purchase orders	27,957	-	-	-	-	-

This committed expenditure relates to plant and equipment and will be financed through ordinary trading operations.

Short-term and low value lease payments – as lessee (expense)

Minimum lease payments due						
- within one year	-	-	9,746	-	-	3,513
- in second to fifth year inclusive	-	-	30,830	-	-	3,812
	-	**-**	**40,576**	**-**	**-**	**7,325**

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 (2020: 3.0 years).

From 1 January 2019, the group has recognised right-if-use assets for these leases, except for short-term and low-value leases, see note 17 for further information.

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

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.

No	Matter name	Matter description	Amount Claimed	Status
1.	Sino Pro	Claim for damages	Service provider claiming R600 000.00 for unlawful termination.	Necsa has a counter claim exceeding the amount claimed by the plaintiff. Potential liability is in the region of R600 000.00
2.	Jan van Rensburg	Claim for damages	The amount claimed R15 000 000.00 for injuries incurred.	Former employee got injured at work. He instituted a claim against Necsa for damages suffered. Necsa is disputing the claim on the basis that the employee should rather submit a claim against the workman compensation fund. The potential liability to be incurred is R15 000 000- 00
3.	Lapa La Africa	Claim for damages	Amount claimed is R4 500 000.00, being the amount for the remainder of the contract.	Necsa offered R200 000.00 for services already rendered but this was rejected. Approaching the court to review and set contract aside.
4.	Jan/Maria Vorster	Claims for monies owed by Necsa in respect of services rendered	Outstanding amount owed are R149 040.00 for Cornelia Vorster and R359 950.00 for Jan. Plaintiffs were employed as Independent Contractors and their contracts were terminated as Necsa no longer required their services.	On 28 September 2020, Necsa was served with Summons. On 22 October 2020, our attorneys of record were served with notice for application of summary judgement. Necsa filed the notice of intention to oppose both matters. Awaiting the notice of set down.

No provision has been made in respect of the above as Necsa does not foresee these claims being successful.

Legal claims:

Possible quantifiable legal obligations exist for the Group totalling an estimated R20 609 000 (2020: R19 831 000) 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 000 000 (2020: R20 000 000) has been given to Pelchem SOC Limited for a Nedbank facility. R14 000 000 (2020: R14 000 000) relates to an overnight facility and R6 000 000(2020: R6 000 000) to an asset based finance.

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 270 107 has been paid to date. The liquidation process is ongoing.

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

36. RELATED PARTIES

Relationships

Holding entity	Department of Mineral Resources and 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	1,592	3,957	4,584	1,592	3,957	4,792
Services received	54,945	52,578	48,910	54,945	52,578	48,910
Trade amount due (to)/ from	(8,109)	(8,109)	5,146	423	(8,109)	5,355
National Government Departments						
Services rendered	840,131	775,625	593,664	840,131	775,625	593,664
Gross trade amount due (to)/from	34,538	1,538	-	34,538	1,538	-
Expected credit loss	(1,538)	(1,538)	-	(1,538)	(1,538)	-
Nett trade amount due (to)/from	**33,000**	**-**	**-**	**33,000**	**-**	**-**
Subsidiaries Loan accounts owing / (to)						
NTP Radioisotopes SOC Ltd	-	-	-	(47,537)	39,165	7,889
Pelchem SOC Ltd	-	-	-	(1,522)	(659)	(12)
NTP Radioisopotes SOC Ltd	-	-	-	(47)	72	58
Trade and Other Receivables						
NTP Radioisotopes SOC Ltd	-	-	-	73,272	18,737	53,746
AEC-Amersham SOC Ltd	-	-	-	37	54	43
Gammatec NDT Supplies Ltd	-	-	-	334	524	399
NTP Logistics SOC Ltd	-	-	-	45	92	90
Pelchem SOC Ltd	-	-	-	254,496	211,709	165,355
Trade and Other Payables						
NTP Radioisotopes SOC Ltd	-	-	-	(304)	(701)	(152)
AEC-Amersham SOC Ltd	-	-	-	(2)	(496)	-
NTP Logistics SOC Ltd	-	-	-	(10,368)	(2,694)	(62)
Pelchem SOC Ltd	-	-	-	-	(16)	-
Interest paid / (received)						
NTP Radioisotopes SOC Ltd	-	-	-	1,993	3,081	3,381

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

36. RELATED PARTIES (CONTINUED)

Purchases

NTP Radioisotopes SOC Ltd	-	-	-	500	1,066	355
AEC-Amersham SOC Ltd	-	-	-	2	504	82
Gammatec NDT Supplies SOC Ltd	-	-	-	24	54	86
NTP Logistics SOC Ltd	-	-	-	1,433	3,218	3,597
Pelchem SOC Ltd	-	-	-	206	14	-
Dividends paid / (received)						
NTP Radioisotopes SOC Ltd	-	-	-	-	-	(20,000)
Sales						
NTP Radioisotopes Ltd	-	-	-	(371,079)	(228,781)	(288,314)
AEC-Amersham SOC Ltd	-	-	-	(661)	(1,034)	(466)
Gammatec NDT Supplies SOC Ltd	-	-	-	(1,309)	(2,011)	(2,112)
NTP Logistics SOC Ltd	-	-	-	(575)	(776)	(690)
Pelchem SOC Ltd	-	-	-	(38,542)	(43,635)	(45,235)
Compensation to Directors and other key management						
Short-term employee benefits	70,954	59,290	65,867	32,765	17,945	22,549

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 254.5 million (2020: R211.7 million; 2019: R164.7 million).

Trade debtor, Gammatec, has payment terms of 60 days. Pelchem trade debtors have payment terms of 120 days. The remaining accounts have payment terms of 30 days.

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

37. DIRECTORS' AND PRESCRIBED OFFICER'S EMOLUMENTS

Group Executives

2021

	Taxable allowance	Leave gratuity	Retirement fund contributions	Other company contribution	Salary	Separation package	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Ms MA Rasweswe	477	-	292	21	1,429	-	2,219
Mr. TJ Tselane	693	-	312	23	1,508	-	2,536
Ms HNB Khumalo	189	-	446	22	1,878	-	2,535
Mr. MA Mondi	331	-	297	19	1,466	-	2,113
Mr. MU Ramatsui	635	-	286	21	1,382	-	2,324
Mr. ZA Ismail	540	-	107	15	507	-	1,169
Ms NF Tengimfene	433	-	195	17	942	-	1,587
Mr. UKRD Natha	729	-	150	17	691	-	1,587
Mr. A Chinake	388	-	185	16	913	-	1,502
Dr JR Zeevaart	388	-	312	21	1,538	-	2,259
Mr. JF du Bruyn	115	-	273	17	1,212	-	1,617
Ms N Matube	368	-	185	16	899	-	1,468
Mr. GP Tshelane	-	195	-	-	-	2,596	2,791
Mr. FM Mkhabela	620	-	166	17	780	-	1,583
	5,906	**195**	**3,206**	**242**	**15,145**	**2,596**	**27,290**

2020

	Taxable allowance	Retirement fund contributions	Other company contribution	Salary	Total
	R'000	R'000	R'000	R'000	R'000
Mr. HJ Viljoen	111	-	20	1,466	1,597
Ms MA Rasweswe	484	291	26	1,429	2,230
Mr. TJ Tselane	702	309	29	1,508	2,548
Ms HNB Khumalo	194	449	29	1,875	2,547
Mr. MA Mondi	339	297	25	1,466	2,127
Mr. MU Ramatsui	644	283	28	1,382	2,337
	2,474	**1,629**	**157**	**9,126**	**13,386**

Notes to the Annual Financial Statements

37. DIRECTORS' AND PRESCRIBED OFFICER'S EMOLUMENTS (CONTINUED)

Non-executive

2021

	Directors' fees	Company contributions	Other fees	Total
	R'000	R'000	R'000	R'000
Ms A Chowan	282	3	1	286
Dr GJ Davids	255	3	-	258
Mr. MJ Maboa	216	3	-	219
Dr NT Magau	247	3	-	250
Ms SKN Masango	322	3	-	325
Mr. DR Nicholls	301	3	11	315
Mr. LJ Shayi	290	3	18	311
Ms L Noge-Tungamirai	262	3	-	265
	2,175	**24**	**30**	**2,229**

2020

	Directors' fees	Company contributions	Other fees	Total
	R'000	R'000	R'000	R'000
Ms A Chowan	35	-	1	36
Dr GJ Davids	23	-	-	23
Ms PN Kingston	47	1	-	48
Dr NT Magau	49	-	-	49
Dr R Masango	22	-	-	22
Ms SKN Masango	35	-	-	35
Dr PE Molokwane	51	1	6	58
Mr. MJ Maboa	31	-	-	31
Mr. JP Ndhlovu	7	-	-	7
Mr. ENN Ngcobo	-	-	1	1
Ms MV Ngwenya	27	-	-	27
Mr. A Patel	5	-	-	5
Mr. DR Nicholls	58	1	4	63
Mr. LJ Shayi	39	-	7	46
Ms L Noge-Tungamirai	39	-	2	41
	468	**3**	**21**	**492**

Notes to the Annual Financial Statements

37. DIRECTORS' AND PRESCRIBED OFFICER'S EMOLUMENTS (CONTINUED)

Executive Director

2021

	Taxable allowance	Retirement Fund Contribution	Other company contributions	Salary	Total
	R'000	R'000	R'000	R'000	R'000
Mr. L Tyabashe	314	86	9	400	809
Mr. AB Myoli	920	256	22	1,239	2,437
	1,234	**342**	**31**	**1,639**	**3,246**

2020

	Taxable allowance	Retirement Fund Contribution	Other company contributions	Salary	Leave gratuity	Non-taxable allowance	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Mr. AB Myoli	778	254	27	1,239	-	-	2,298
Mr. GP Tshelane	479	-	9	276	-	-	764
Mr. DG Robertson	-	-	11	834	112	48	1,005
	1,257	**254**	**47**	**2,349**	**112**	**48**	**4,067**

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

38.1. 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 2020 and 2019 figures.

Group

Effect on the Consolidated Statement of Financial Position - Company - 2019	Previous opening balance stated 2019	Restated opening balance 2019	Net movement
	R'000	R'000	R'000
Current Assets			
Non-Current assets	**4,361,170**	**4,432,944**	**(71,774)**
Other financial assets (1)	853,634	902,642	(49,008)
Decommissioning and Decontamination of Stage 1 (asset) (2)	3,309,472	3,288,154	21,318
Decommissioning and Decontamination of Stage 2 (asset) (3)	198,064	242,148	(44,084)
Equity	**(69,487)**	**239,392**	**(308,879)**
Accumulated loss (4)	(69,487)	239,392	(308,879)
Non-Current Liabilities	**(3,939,419)**	**(4,315,634)**	**376,215**
Vaalputs After Care (liab) (5)	(88,193)	(97,952)	9,759
Decommissioning and Decontamination of Stage 1 (liability) (6)	(3,309,472)	(3,288,154)	(21,318)
Decommissioning and Decontamination of Stage 2 (liability) (7)	(541,754)	(929,528)	387,774
Current Liabilities	**(466,660)**	**(471,098)**	**4,438**
Trade and other payables (8)	(466,660)	(471,098)	4,438
	(114,396)	**(114,396)**	**-**

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(1) Correction of prior period calculation error in relation to Decommissioning and Decontamination of Stage 2 resulting in an opening balance adjustment of R49 008(Ct).

(2) Correction of prior period calculation error in relation to Decommissioning and Decontamination of Stage 1 resulting in an opening balance adjustment of R21 318 (Dt).

(3) Correction of prior period calculation error in relation to Decommissioning and Decontamination of Stage 2 resulting in an opening balance adjustment of R44 084 (Ct).

(4) An adjustment to the Caseware system to align to the Solomon system resulting in an opening balance adjustment of R19 (Dt). Reversal of a journal that was incorrectly posted in the prior period resulting in an opening balance adjustment of R4 457 (Ct). Correction of prior period calculation error in relation to Decommissioning and Decontamination of Stage 1 & 2 resulting in an opening balance adjustment of R298 682 (Ct). Reversal of a journal that was incorrectly posted in the prior period resulting in an opening balance adjustment of R9 759 (Ct).

(5) Reversal of a journal that was incorrectly posted in the prior period resulting in an opening balance adjustment of R9 759 (Dt). (6) Correction of prior period calculation error in relation to Decommissioning and Decontamination of Stage 1 & 2 resulting in an opening balance adjustment of R21 318 (Ct).

(7) Correction of prior period calculation error in relation to Decommissioning and Decontamination of Stage 2 resulting in an opening balance adjustment of R387 774 (Dt).

(8) Reversal of a journal that was incorrectly posted in the prior period resulting in an opening balance adjustment of R4 457 (Dt). An adjustment to the Caseware system to align to the Solomon system resulting in an opening balance adjustment of R19 (Ct).

BALANCE SHEET	Previously stated 2019	Restatement 2019	Net movement
	R'000	R'000	R'000
Assets			
Non-Current Assets	**6,367,002**	**5,055,344**	**1,311,658**
Property, plant and equipment (1)	1,364,172	1,393,976	(25,704)
Investment property (2)	42,990	-	42,990
Goodwill (3)	37,514	16,584	20,930
Deferred tax (4)	79,979	134,960	(54,981)
Decommissioning and Decontamination of Stage 1 Asset (5)	4,561,755	3,330,790	1,230,965
11200. Decommissioning and Decontamination of Stage 2 Asset (6)	277,203	153,979	123,224
Vaalputs After Care Asset (44)	3,389	25,055	(21,666)
Current Assets	**1,413,569**	**1,633,040**	**(219,471)**
Inventories (7)	309,440	307,770	1,670
Loans to group companies (8)	3,310	-	3,310
Trade and other receivables (9)	406,173	628,836	(222,663)
Other financial assets Current (10)	318,930	313,813	5,117
Prepayments (11)	6,033	7,821	(1,788)
Cash and cash equivalents (12)	369,683	374,800	(5,117)

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Equity and liabilities			
Equity	**(748,875)**	**(1,020,322)**	**271,447**
Reserves (13)	(617,109)	(610,044)	(7,065)
Accumulated loss (14)	(69,487)	(355,202)	285,715
Non-controlling interest (15)	(62,279)	(55,076)	(7,203)
Liabilities			
Non-Current Liabilities	**(6,089,012)**	**(4,730,024)**	**(1,358,988)**
Vaalputs After Care (16)	(94,199)	(43,241)	(50,958)
Deferred income (17)	(539,209)	(539,976)	767
Deferred tax (18)	(4,683)	(35,538)	30,855
Provisions Non-Current (19)	(571,949)	(583,795)	11,846
Investment contributions for future liabilities (20)	(40,014)	(42,705)	2,691
Decommissioning and Decontamination of Stage 1 Liability (21)	(4,561,755)	(3,330,790)	(1,230,965)
Decommissioning and Decontamination of Stage 2 Liability (22)	(277,203)	(153,979)	(123,224)
Current Liabilities	**(686,040)**	**(681,395)**	**(4,645)**
Trade and other payables (23)	(516,577)	(539,369)	22,792
Loans from group companies (24)	(3,310)	-	(3,310)
Deferred income (25)	(41,629)	(23,442)	(18,187)
Provisions Current (26)	(79,750)	(72,625)	(7,125)
Bank overdraft (27)	(44,774)	(45,959)	1,185
	256,644	**256,644**	**-**

INCOME STATEMENT	Previously stated 2019	Restatement 2019	Net movement
	R'000	R'000	R'000
Revenue (28)	(2,132,528)	(2,150,357)	17,829
Cost of sales (29)	1,517,651	1,503,147	14,504
Other income (30)	(470,617)	(152,165)	(318,452)
Expected credit loss trade receivables (31)	(31,110)	(122,501)	91,391
Other operating expenses (32)	1,206,049	1,129,218	76,831
Government Grant Income (Decommissioning & Decontamination Stage 1 & 2) (33)	(1,038,694)	315,495	(1,354,189)
Acceptance of Decommission and Decontamination Stage 1 & 2 (34)	1,302,963	(315,495)	1,618,458
Investment income (35)	(300,345)	(291,489)	(8,856)
Fair value adjustments (36)	(3,022)	(3,733)	711
Finance costs (37)	(994)	153,995	(154,989)
Taxation (38)	(55,407)	(64,773)	9,366
Remeasurements on net defined benefit liability/asset (39)	(37,926)	(45,436)	7,510
(Losses) gains on property revaluation (40)	(73,300)	(67,540)	(5,760)
Fair value adjustment on financial assets (41)	-	6	(6)
Income tax relating to items that will not be reclassified (42)	-	1,365	(1,365)
Fair value through other comprehensive income adjustments (43)	(5,389)	47	(5,436)
	(122,669)	**(110,216)**	**(12,453)**

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Effect on the Cash Flows - Group - 2019

Cash receipts from customers	2,541,253	2,018,325	522,928
Cash paid to suppliers and employees	(2,912,872)	(2,369,248)	(543,624)
Interest income	85,998	75,839	10,159
Finance costs	(8,917)	(11,432)	2,515
Dividends received/(paid)	-	1,303	(1,303)
Tax (paid) received	9,722	(5,038)	14,760
Cash flows from discontinued operations	-	(1,168)	1,168
Purchase of property, plant and equipment	(21,927)	(51,029)	29,102
Proceeds from sale of property, plant and equipment	452	885	(433)
Proceeds / (Purchase) of other intangible assets	-	(211)	211
Movement in financial assets	249,362	274,521	(25,159)
Loan to group companies	62,839	-	62,839
Change in loans from group companies	(62,839)	-	(62,839)
Movement in investment contributions for future liabilities	2,321	5,012	(2,691)
Movement in deferred Grant Income	(17,296)	(16,529)	(767)
Dividends paid	(25,090)	(5,005)	(20,085)
Short-term and low value lease payments	(49,737)	(59,024)	9,287
	(146,731)	**(142,799)**	**(3,932)**

(1) Reclassified R214 433 (Dt) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit.In the 2019 financial year, items of property, plant and equipment that had shown indicators of impairment, due to being idle and not producing to its maximum capacity, were assessed for impairment. However, the recoverable amount determined was incorrect resulting in an overstatement of the property, plant and equipment balance and related expense resulting in an adjustment of R17 283 (Ct). Reversal of 2019 elimination allocation for disclosure purposes on the Annual financial statements resulting in an adjustment of R171 443 (Ct). An impairment provision of R82 802 (Ct) was reclassified from Cost to Accumulated Depreciation / Impairment and this had a net effect of zero on the carrying value.

(2) Reclassified R214 433 (Ct) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit.Reversal of 2019 elimination allocation for disclosure purposes on the Annual financial statements resulting in an adjustment of R171 443 (Dt).

(3) Elimination of goodwill on consolidation level for 2019 resulting in an adjustment of R20 930 (Ct).

(4) Correction of taxation due to the impact of correcting prior period errors resulting in an adjustment of R24 126 (Dt). Reclassified R30 854 (Ct) under consolidation from non-current Deferred Tax assets to non-current Deferred Tax liabilities.

(5) Restatement of Government grant component after revaluation performed resulting in a movement of R1 230 965 (Ct)

(6) Restatement of Government grant component after revaluation performed resulting in a movement of R123 224 (Ct).

(7) In the 2019 financial year the inventory listing did not agree to the trial balance, resulting in an overstatement of inventory and an understatement of cost of sales resulting in an adjustment of R1 671 (Ct).

(8) Elimination of an intercompany loan that was not done during the prior period resulting in and adjustment of R3 310 (Ct).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(9) An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R52 (Ct). An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R4 207 (Dt).Adjustment of the ECL calculation for 2019 resulting in an adjustment of R182 939 (Dt). As IFRS 9 Financial Instruments became effective on 1 January 2018, management was required to reassess their provision for bad debts taking into the account the requirements of this new standard. However, management had not performed an expected credit loss (ECL) allowance in terms of IFRS 9 during the 2019 and 2020 financial years resulting in an understatement of trade and other receivables and an overstatement of the related expense. Revenue relating to the 2019 financial year was incorrectly recognised in 2020. Consequently, revenue and the related trade and other receivables balance had been understated in 2019 financial year and overstated in 2020 financial year resulting in a nett adjustment of R7 367 (Dt). Reclassified R1 884 (Dt) from Trade and other receivables to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R4 411 (Ct) from Trade and other payables to Trade and other receivables as it was incorrectly classified in the prior period.Other adjustments totalling R34 497 (Dt).

(10) Reclassified R5 117 (Dt) from Other financial assets to Cash and cash equivalents as this relates to a bank account that was incorrectly classified in the prior period under Other financial assets.

(11) Reallocation of prepayments with credit balances to Trade and other receivables to allow for more accurate disclosure resulting in an adjustment of R42 185 (Dt). Other adjustments totalling R1 788 (Dt).

(12) Reclassified R5 117 (Dt) from Other financial assets to Cash and cash equivalents as this relates to a bank account that was incorrectly classified in the prior period under Other financial assets.

(13) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount.

(14) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount. The remaining of the adjustments relate to adjustments to the Statements of Comprehensive income accounts where accumulated loss was effected as the contra account.Recalculation of the minority interest share resulting in an adjustment of R7 203 (Ct). Elimination of goodwill on consolidation level for 2019 resulting in an adjustment of R20 930 (Dt). Prior period error resulting in an adjustment of R28 362 (Dt). Correction of taxation due to the impact of correcting prior period errors resulting in an adjustment of R13 346 (Ct). Adjustment of the ECL calculation for 2019 resulting in an adjustment of R182 939 (Ct). Other adjustments totalling R36 268 (Ct).

(15) Recalculation of the minority interest share resulting in an adjustment of R7 203 (Dt).

(16) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial positon for comparison to the required funds to discharge Vaalputs after care in future. Restatement after revaluation performed resulting in a movement of R46 319 (Dt). Reversal of a journal that was incorrectly posted in the prior period resulting in a movement of 9 759 (Dt).

(17) Reclassified R767 (Ct) from Trade and other payables to Deferred income as it was incorrectly classified in the prior period.

(18) Reclassified R30 854 (Ct) under consolidation from non-current Deferred Tax assets to non-current Deferred Tax liabilities.

(19) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial positon for comparison to the required funds to discharge Vaalputs after care in future. Reclassified R13 076 (Ct) from Other financial liabilities to Provisions NON CURRENT as it was incorrectly classified in the prior period. The decommissioning and decontamination provision assessment performed in prior years had incorrectly excluded 2 plants from the scope and assumed the incorrect discount rate for the unwinding of the provision. Consequently, provisions and the related expense had been understated for the 2019 and 2020 financial years resulting in an adjustment of R3 890 (Ct).

(20) Restatement after revaluation performed resulting in a movement of R2 691 (Ct)

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(21) Restatement of Government grant component after revaluation performed resulting in a movement of R1 230 965 (Dt)

(22) Restatement of Government grant component after revaluation performed resulting in a movement of R123 224 (Dt).

(23) Reclassified R8 627 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R767 (Ct) from Trade and other payables to Deferred income as it was incorrectly classified in the prior period. An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R403 (Dt). An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R20 (Ct). Opening balance correction against retained earnings resulting in an adjustment of R4 458 (Dt).In the 2019 financial year, VAT had been incorrectly accounted for as a receivable as opposed to a payable per the VAT 201 form. Furthermore, the amount recognised as a receivable was also incorrect. Consequently, trade and other receivables had been overstated and trade and other payables had been understated. Accruals for which goods have been received and services had been rendered but not yet invoiced were not raised. Consequently, trade and other payables and the related expense had been understated for the 2019 financial year. Invalid accruals raised in the 2017, 2018 and 2019 financial years were incorrectly derecognized in the 2020 financial year as opposed to the respective year to which it relates. Consequently, trade and other payables and the related expense had been overstated in the 2018 and 2019 financial years, and retained earnings and the related expenses have been understated in the 2020 financial year. The decommissioning and decontamination provision assessment performed in prior years had incorrectly excluded 2 plants from the scope and assumed the incorrect discount rate for the unwinding of the provision. Consequently, provisions and the related expense had been understated for the 2019 and 2020 financial years. Grants received from the Department of Science and Technology has incorrectly been recognized as revenue. This should be recognized as an payment received in advance. Consequently, overstating revenue and understating trade and other payables in the 2019 financial year resulting in a nett adjustment of R12 645 (Ct). Reallocation of prepayments with credit balances to Trade and other receivables to allow for more accurate disclosure resulting in an adjustment of R? (). Reclassified R1 884 (Dt) from Trade and other receivables to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R3 609 (Ct) from Other financial liabilities to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R4 411 (Ct) from Trade and other payables to Trade and other receivables as it was incorrectly classified in the prior period. Certain items have been corrected to disclose liabilities and expenses that relates to an overhead charge from the holding company, the expense was not accrued as a liability resulting in an adjustment of R1 201 (Dt). Other adjustments totalling R8 281 (Dt).

(24) Elimination of an intercompany loan that was not done during the prior period resulting in and adjustment of R3 310 (Dt).

(25) Other adjustments totalling R18 187 (Dt).

(26) Reclassified R8 627 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period.Other adjustments totalling R1 502 (Ct).

(27) Other adjustments totalling R1 185 (Ct).

(28) An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R350 (Ct). An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R13 064 (Ct). Reclassified R1 102 (Ct) from Revenue to Other income as it was incorrectly classified in the prior period. Reclassified R272 (Ct) from Other income to Revenue as it was incorrectly classified in the prior period. Revenue relating to the 2019 financial year was incorrectly recognised in 2020. Consequently, revenue and the related trade and other receivables balance had been understated in 2019 financial year and overstated in 2020 financial year. In the 2019 financial year, revenue received in advance was incorrectly recognised as revenue as control had only transferred in the subsequent financial year. This resulted in revenue being overstated in 2019 and understated in 2020. Grants received from the Department of Science and Technology has incorrectly been recognized as revenue. This should be recognized as an payment received in advance. Consequently, overstating revenue and understating trade and other payables in the 2019 financial year resulting in a nett adjustment of R5 245 (Ct).

(29) In the 2019 and 2020 financial years, items of property, plant and equipment that had shown indicators of impairment, due to being idle and not producing to its maximum capacity, were assessed for impairment. However, the recoverable amount determined was incorrect resulting in an overstatement of the property, plant and equipment balance and related expense. Invalid accruals raised in the 2017, 2018 and 2019 financial years were incorrectly derecognized in the 2020 financial year as opposed to the respective year to which it relates. Consequently, trade and other payables and the related expense had been overstated in the 2018 and 2019 financial years, and retained earnings and the related expenses have been understated in the 2020 financial year. In the 2019 financial year the inventory listing did not agree to the trial balance, resulting in an overstatement of inventory and an understatement of cost of sales resulting in a nett adjustment of R13 536 (Ct). Reclassified R408 (Ct) from Other income to Cost of sales as it was incorrectly classified in the prior period. Reclassified R5 (Dt) from Other operating expenses to Cost of sales as it was incorrectly classified in the prior period. Reclassified R564 (Dt) from Cost of sales to Other operating expenses as it was incorrectly classified in the prior period.

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(30) Reclassified R341 301 (Ct) from Other income to Government Grant Income as Other income was split into different sections for this year on the face of the Statement of comprehensive income.In the 2018 financial year, foreign debtors had not been remeasured at the closing spot rate at year end, as per IAS 21 The Effects of Changes in Foreign Exchange Rates. Consequently, trade and other receivables and the related forex expense had been overstated in 2018. This has been corrected in the 2019 retained earnings opening balance resulting in an adjustment of R930 (Ct). Prior period error resulting in an adjustment of R11 933 (Ct). Reallocation of balances between Other income and Other operating expenses to allow for more accurate disclosure resulting in an adjustment of R43 722 (Ct). Reclassified R1 102 (Ct) from Revenue to Other income as it was incorrectly classified in the prior period. Reclassified R1 283 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R272 (Ct) from Other income to Revenue as it was incorrectly classified in the prior period. Reclassified R4 903 (Dt) from Other operating expenses to Other income as it was incorrectly classified in the prior period. Reclassified R408 (Ct) from Other income to Cost of sales as it was incorrectly classified in the prior period. Other adjustments totalling R27 972 (Dt).

(31) Reclassified R87 339 (Dt) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income. The Movement in credit loss allowances has been disaggregated from other operating expenses resulting in a movement of R508 (Dt). Other adjustments totalling R3 971 (Ct).

(32) Reclassified R87 339 (Dt) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income. Revaluation of Waste Drums After Care resulting in a movement of R2 691 (Dt). Restatement after revaluation performed on Vaalputs resulting in a movement of R32 441 (Dt). A calculation error in the prior period resulting in and adjustment of R12 369 (Ct).Adjustment of the ECL calculation for 2019 resulting in an adjustment of R182 939 (Ct). Prior period error resulting in an adjustment of R1 006 (Dt). Reallocation of balances between Other income and Other operating expenses to allow for more accurate disclosure resulting in an adjustment of R43 722 (Dt). Reclassified R1 283 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R4 903 (Dt) from Other operating expenses to Other income as it was incorrectly classified in the prior period. Reclassified R5 (Dt) from Other operating expenses to Cost of sales as it was incorrectly classified in the prior period. Reclassified R564 (Dt) from Cost of sales to Other operating expenses as it was incorrectly classified in the prior period. The Movement in credit loss allowances has been disaggregated from other operating expenses resulting in a movement of R508 (Ct). Certain items have been corrected to disclose liabilities and expenses that relates to an overhead charge from the holding company, the expense was not accrued as a liability resulting in an adjustment of R1 201 (Dt). Other adjustments totalling R24 917 (Ct).

(33) Reclassified R341 301 (Ct) from Other income to Government Grant Income as Other income was split into different sections for this year on the face of the Statement of comprehensive income. Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R1 354 188 (Dt). A calculation error in the prior period resulting in and adjustment of R341 301 (Dt).

(34) Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R1 354 188 (Ct). A calculation error in the prior period resulting in and adjustment of R264 269 (Ct).

(35) An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R8 856 (Dt).

(36) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 movement the fair value decreased with through fair value adjustments with R711 (Dt) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount.

(37) Restatement after revaluations performed on Decommissioning and Decontamination of Stage 1 & 2 and Vaalputs resulting in a decrease in the finance cost component of R78 760 (Ct). A calculation error in the prior period resulting in and adjustment of R230 019 (Dt).Invalid accruals raised in the 2017, 2018 and 2019 financial years were incorrectly derecognized in the 2020 financial year as opposed to the respective year to which it relates. Consequently, trade and other payables and the related expense had been overstated in the 2018 and 2019 financial years, and retained earnings and the related expenses have been understated in the 2020 financial year resulting in an adjustment of R3 730 (Dt).

(38) Correction of taxation due to the impact of correcting prior period errors resulting in an adjustment of R9 366 (Ct). (39) Other adjustments totalling R7 510 (Ct).

(40) Correction of movement in gains on property revaluation on the face of the Statement of Comprehensive Income resulting in an adjustment of R5 760 (Dt).

(41) Correction of movement in Fair value adjustment on financial assets on the face of the Statement of Comprehensive Income resulting in an adjustment of R6 (Dt).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(42) Correction of movement in Income tax relating to items that will not be reclassified on the face of the Statement of Comprehensive Income resulting in an adjustment of R1 365 (Dt).

(43) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 movement the fair value decreased through other comprehensive income adjustments with R711 (Ct).Correction of movement in Fair value through other comprehensive income adjustments on the face of the Statement of Comprehensive Income resulting in an adjustment of R6 147 (Dt).

(44) The value of the Vaalputs After Care Asset was misstated. The initial estimate of D&D Costs on the Vaalputs site should have been capitalised to the Vaalputs Asset and not through retained earnings. The asset increased in 2019 with R21 666 (Dt).

BALANCE SHEET	Previously stated 2020	Restatement 2020	Net movement
	R'000	R'000	R'000
Assets			
Non-Current Assets	**6,294,997**	**4,618,677**	**1,676,320**
Property, plant and equipment (1)	1,318,404	1,353,101	(34,697)
Investment property (2)	53,654	-	53,654
Right-of-use assets (3)	85,368	10,367	75,001
Goodwill (4)	51,558	16,584	34,974
Intangible assets (5)	26,017	27,510	(1,493)
Deferred tax (6)	168,888	171,520	(2,632)
Decommissioning and Decontamination of Stage 1 Asset (7)	4,346,295	2,901,145	1,445,150
Decommissioning and Decontamination of Stage 2 Asset (8)	241,800	114,132	127,668
Vaalputs After Care Asset (46)	3,013	24,318	(21,305)
Current Assets	**521,126**	**524,694**	**(3,568)**
Trade and other receivables (9)	327,086	319,384	7,702
Prepayments (10)	194	2,400	(2,206)
Cash and cash equivalents (11)	193,846	202,910	(9,064)
Equity and liabilities			
Equity	**(808,339)**	**(827,172)**	**18,833**
Reserves (12)	(621,617)	(624,681)	3,064
Accumulated loss (13)	(117,989)	(143,767)	25,778
Non-controlling interest (14)	(68,733)	(58,724)	(10,009)
Liabilities			
Non-Current Liabilities	**(5,434,262)**	**(3,750,107)**	**(1,684,155)**
Vaalputs After Care (15)	(101,076)	(46,592)	(54,484)
Lease Liabilities Non-Current (16)	(75,751)	(2,163)	(73,588)
Deferred tax (17)	(49,348)	(45,375)	(3,973)
Provisions Non-Current (18)	(576,332)	(594,770)	18,438
Investment contributions for future liabilities (19)	(43,660)	(45,930)	2,270
Decommissioning and Decontamination of Stage 1 Liability (20)	(4,346,295)	(2,901,145)	(1,445,150)
Decommissioning and Decontamination of Stage 2 Liability (21)	(241,800)	(114,132)	(127,668)

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Current Liabilities	**(459,129)**	**(451,699)**	**(7,430)**
Trade and other payables (22)	(198,754)	(224,844)	20,838
Lease Liabilities Current (23)	(11,131)	(3,967)	(7,164)
Deferred income (24)	(19,298)	34,525	(53,823)
Provisions Current (25)	(82,451)	(76,074)	(6,377)
Bank overdraft (26)	(21,965)	(23,909)	1,944
Amounts received in advance (45)	(125,530)	(157,430)	31,900
	114,393	**114,393**	**-**

INCOME STATEMENT	Previously stated 2020	Restatement 2020	Net movement
	R'000	R'000	R'000
Revenue (27)	(1,790,847)	(1,792,582)	1,735
Cost of sales (28)	799,683	800,221	(538)
Other income (29)	(51,598)	(56,486)	4,888
Expected credit loss trade receivables (30)	46,388	57,352	(10,964)
Other operating expenses (31)	1,037,718	1,060,682	(22,964)
Government Grant Income (Decommissioning & Decontamination Stage 1 & 2) (32	522,636	698,620	(175,984)
Acceptance of Decommission and Decontamination Stage 1 & 2 (33)	(522,636)	(698,620)	175,984
Administration and fees (34)	144,747	245,810	(101,063)
Investment income (35)	(323,705)	(282,387)	(41,318)
Fair value adjustments (36)	6,909	7,010	(101)
Finance costs (37)	293,494	236,467	57,027
Taxation (38)	(25,167)	(26,114)	947
Loss from discontinued operations (39)	(5,482)	5	(5,487)
Remeasurements on net defined benefit liability/asset (40)	(45,921)	(52,985)	7,064
(Losses) gains on property revaluation (41)	(288)	(7,134)	6,846
Fair value adjustment on financial assets (42)	-	11	(11)
Income tax relating to items that will not be reclassified (43)	-	1,263	(1,263)
Fair value through other comprehensive income adjustments (44)	(3,803)	460	(4,263)
	82,128	**191,593**	**(105,202)**

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Effect on the Cash Flows - Group - 2020	Previously stated 2020	Restatement 2020	Net movement
	R'000	R'000	R'000
Cash receipts from customers	1,887,223	2,123,749	(236,526)
Cash paid to suppliers and employees	(2,282,779)	(2,374,600)	91,821
Interest income	51,786	51,770	16
Finance costs	(5,069)	(6,255)	1,186
Dividends received/(paid)	-	1,344	(1,344)
Tax (paid) received	(16,565)	1,903	(18,468)
Cash flows from discontinued operations	-	(5)	5
Purchase of property, plant and equipment	(47,836)	(48,012)	176
Proceeds from sale of property, plant and equipment	4,103	290	3,813
Proceeds / (Purchase) of other intangible assets	-	(1,607)	1,607
Movement in financial assets	122,498	(52,554)	175,052
Loan to group companies	3,310	-	3,310
Movement in Goodwill	(14,044)	-	(14,044)
Change in loans from group companies	(3,310)	-	(3,310)
Movement in investment contributions for future liabilities	3,646	3,225	421
Movement in deferred Grant Income	182,925	181,047	1,878
Dividends paid	(24,548)	(2,239)	(22,309)
Lease payments	(20,752)	(25,886)	5,134
Short-term and low value lease payments	(3,798)	(12,192)	8,394
Cash at the beginning of the year	324,909	328,841	(3,932)
	161,699	**168,819**	**(7,120)**

(1) Reclassified R215 183 (Dt) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit. Reclassified R1 493 (Dt) from Property, plant and equipment to Intangible assets as this represents computer software. Depreciation amounting to R8 488 calculated on buildings re-classified to Property, plant and equipment that were previously classified as Investment Property. Revaluation of land and buildings resulting in a nett movement of R3 000 (Dt) for land and R3 636 (Dt) for buildings.In the 2019 and 2020 financial years, items of property, plant and equipment that had shown indicators of impairment, due to being idle and not producing to its maximum capacity, were assessed for impairment. However, the recoverable amount determined was incorrect resulting in an overstatement of the property, plant and equipment balance and related expense resulting in an adjustment of R14 787 (Ct). Reclassifiifcation of leased vehicles from Property, plant and equipment to Right-of-use assets during the consolidation process resulting in an adjustment of R823 (Ct). Reversal of 2020 elimination allocation for disclosure purposes on the Annual financial statements resulting in an adjustment of R161 529 (Ct). An impairment provision of R82 802 (Ct) was reclassified from Cost to Accumulated Depreciation / Impairment and this had a net effect of zero on the carrying value.

(2) Reclassified R215 183 (Dt) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit.Reversal of 2020 elimination allocation for disclosure purposes on the Annual financial statements resulting in an adjustment of R161 529 (Dt).

(3) Previously partial depreciation was recorded incorrectly as both the debit and credit leg was posted against the income statement R85 (Ct) for leased vehicles and R8 (Ct) for leased equipment. Correction of calculation error pertaining to Right of Use Assets amounting to an adjustment of R656 (Ct).Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R29 819 (Ct). Elimination of Right-of-use assets which relates to facilities leased by Pelchem from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R45 256 (Ct). Reclassification of leased vehicles from Property, plant and equipment to Right-of-use assets during the consolidation process resulting in an adjustment of R823 (Dt).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(4) Elimination of goodwill on consolidation level for 2020 resulting in an adjustment of R34 975 (Ct).

(5) Reclassified R1 493 (Dt) from Property, plant and equipment to Intangible assets as this represents computer software.

(6) Reclassified R2 632 (Ct) under consolidation from non-current Deferred Tax assets to non-current Deferred Tax liabilities.

(7) Restatement of Government grant component after revaluation performed resulting in a movement of R1 408 987 (Ct) and resulting finance income movement of R36 163 (Ct).

(8) Restatement of Government grant component after revaluation performed resulting in a movement of R127 669 (Ct).

(9) An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R4 207 (Dt). Invoices issued in the incorrect accounting period, subsequently corrected resulting in an adjustment of R1 278 (Dt). Intergroup invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R26 (Dt). Creditors invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R21 (Dt). Pro Forma invoice processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R2 (Ct). Correction of a calculation error in the prior period expected credit loss, resulting in an adjustment of R11 376 (Dt). Adjustment of the ECL for 2020 for elimination and roll forward of the 2019 ECL calculation adjustment resulting in an adjustment of R243 575 (Dt). As IFRS 9 Financial Instruments became effective on 1 January 2018, management was required to reassess their provision for bad debts taking into the account the requirements of this new standard. However, management had not performed an expected credit loss (ECL) allowance in terms of IFRS 9 during the 2019 and 2020 financial years resulting in an understatement of trade and other receivables and an overstatement of the related expense. Revenue relating to the 2019 financial year was incorrectly recognised in 2020. Consequently, revenue and the related trade and other receivables balance had been understated in 2019 financial year and overstated in 2020 financial year resulting in a nett adjustment of R911 (Dt). Provision for uncollectable debt that was not previously provided for resulting in a nett adjustment of R105 765 (Ct). Reclassified R247 (Dt) from Trade and other receivables to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R27 (Ct) from Trade and other payables to Trade and other receivables as it was incorrectly classified in the prior period. Reclassification during the consolidation process of Prepayments incorrectly mapped to Trade and other receivables in the prior year resulting in an adjustment of R2 206 (Ct). Correction of the ECL provision resulting in an adjustment of R160 848 (Ct).

(10) Reclassification during the consolidation process of Prepayments incorrectly mapped to Trade and other receivables in the prior year resulting in an adjustment of R2 206 (Dt).

(11) Reclassified less than R1 (Dt) from Cash and cash equivalents to Other financial assets due to incorrect classification under Other financial assets in the prior period.Payables to suppliers were recorded as a payment made, however, the actual payment only took place in the subsequent financial year. Consequently, cash and cash equivalents and trade and other payables had been understated for the 2020 financial year. Negative bank balances had been incorrectly classified as cash and cash equivalents in the 2020 financial year. Consequently, cash and cash equivalents and bank overdraft had been understated resulting in a nett adjustment of R9 061 (Dt).

(12) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount. For 2020 the movement adjustment was R100 (Ct), but the reserve increased and retained earnings decreased. Revaluation of land and buildings resulting in the following movement in the associated revaluation reserve of R3 000 (Ct) for land and R3 636 (Ct) for buildings. Prior period error resulting in an adjustment of R6 427 (Ct). Correction of movement in Non-controlling interest on the face of the Statement of Comprehensive Income resulting in an adjustment of R10 009 (Ct). Correction of movement in Fair value adjustment on financial assets on the face of the Statement of Comprehensive Income resulting in an adjustment of R11 (Ct). Correction of movement in Income tax relating to items that will not be reclassified on the face of the Statement of Comprehensive Income resulting in an adjustment of R1 263 (Ct). Correction of movement in Fair value through other comprehensive income adjustments on the face of the Statement of Comprehensive Income resulting in an adjustment of R4 163 (Ct). Correction of movement in Remeasurements on net defined benefit liability/assets on the face of the Statement of Comprehensive Income resulting in an adjustment of R7 064 (Dt). Other adjustments totalling R13 382 (Dt).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(13) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount. For 2020 the movement adjustment was R100 (Ct), but the reserve increased and retained earnings decreased. The remaining of the adjustments relate to adjustments to the Statements of Comprehensive income accounts where accumulated loss was effected as the contra account.Adjustment of minority interest according to calculations resulting in an adjustment of R10 450 (Ct). Adjustment of minority interest according to calculations resulting in an adjustment of R441 (Dt). Adjustment of the ECL for 2020 for elimination and roll forward of the 2019 ECL calculation adjustment resulting in an adjustment of R182 939 (Ct). Elimination of goodwill on consolidation level for 2020 resulting in an adjustment of R34 974 (Dt). Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R2 517 (Ct). Prior period error resulting in an adjustment of R3 033 (Ct). Reclassified R5 012 (Ct) from Accumulated loss to Other operating expenses as it was incorrectly classified in the prior period. Correction of the ECL provision resulting in an adjustment of R160 848 (Dt). Other adjustments totalling R45 593 (Dt).

(14) Correction of movement in Non-controlling interest on the face of the Statement of Comprehensive Income resulting in an adjustment of R10 009 (Dt).

(15) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial positon for comparison to the required funds to discharge Vaalputs after care in future. Restatement after revaluation performed resulting in a movement of R59 604 (Dt).

(16) Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R3 479 (Dt). Elimination of Right-of-use assets which relates to facilities leased by Pelchem from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R43 868 (Dt). Other adjustments totalling R26 241 (Dt).

(17) Reclassified R2 632 (Ct) under consolidation from non-current Deferred Tax assets to non-current Deferred Tax liabilities. Correction of taxation due to the impact of correcting prior period errors resulting in an adjustment of R6 607 (Dt).

(18) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial positon for comparison to the required funds to discharge Vaalputs after care in future. Revaluation of Waste Drums After Care resulting in a movement of R4 201 (Ct).Reclassified R1 063 (Ct) from Provisions NON CURRENT to Other financial liabilities as it was incorrectly classified in the prior period. Reclassified R13 638 (Ct) from Other financial liabilities to Provisions NON CURRENT as it was incorrectly classified in the prior period. The decommissioning and decontamination provision assessment performed in prior years had incorrectly excluded 2 plants from the scope and assumed the incorrect discount rate for the unwinding of the provision. Consequently, provisions and the related expense had been understated for the 2019 and 2020 financial years resulting in an adjustment of R5 092 (Ct). Other adjustments totalling R1 689 (Ct).

(19) Restatement after revaluation performed resulting in a movement of R2 898 (Ct)Other adjustments totalling R628 (Dt).

(20) Restatement of Government grant component after revaluation performed resulting in a movement of R1 408 987 (Dt) and resulting finance income movement of R36 163 (Dt).

(21) Restatement of Government grant component after revaluation performed resulting in a movement of R127 669 (Dt).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(22) Reclassified R8 621 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period. Adjusted to provide for the agreed upon audit fees for the 2020 financial period as per the audit engagement letter resulting in an adjustment of R8 885 (Ct). Correction of a calculation error in the prior period expected credit loss, resulting in an adjustment of R24 (Dt). Creditors invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R158 (Ct). Intergroup invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R3 (Ct). Opening balance correction against retained earnings resulting in an adjustment of R4 438 (Dt). Pro Forma invoice processed in the incorrect financial period, subsequently corrected resulting in an adjustment of less than R1 (Dt). Payables to suppliers were recorded as a payment made, however, the actual payment only took place in the subsequent financial year. Consequently, cash and cash equivalents and trade and other payables had been understated for the 2020 financial year. In the 2020 financial year, goods and services from NECSA was incorrectly classified as a 'loan from shareholder' but should have been classified as trade and other payables. Consequently, loans from shareholders had been overstated and trade and other payables had been understated resulting in a nett adjustment of R7 121 (Ct). Reclassified R247 (Dt) from Trade and other receivables to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R27 (Ct) from Trade and other payables to Trade and other receivables as it was incorrectly classified in the prior period. Reclassified R3 777 (Ct) from Other financial liabilities to Trade and other payables as it was incorrectly classified in the prior period. Reversed a journal posted in 2020 incorrectly passed in 2020 in response to an audit finding, resulting in an adjustment of R2 626 (Ct)

(23) Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R26 667 (Dt). Elimination of Right-of-use assets which relates to facilities leased by Pelchem from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R3 737 (Dt). Other adjustments totalling R26 240 (Ct).

(24) Other adjustments totalling R19 298 (Dt). Reversed a journal posted in 2020 incorrectly passed in 2020 in response to an audit finding, resulting in an adjustment of R34 526 (Dt)

(25) Reclassified R8 621 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period.Other adjustments totalling R1 884 (Ct).

(26) Negative bank balances had been incorrectly classified as cash and cash equivalents in the 2020 financial year. Consequently, cash and cash equivalents and bank overdraft had been understated resulting in an adjustment of R1 940 (Ct).

(27) An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R350 (Dt). Correction of a calculation error in the prior period expected credit loss, resulting in an adjustment of R1 997 (Dt). Intergroup invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R22 (Ct). Invoices issued in the incorrect accounting period, subsequently corrected resulting in an adjustment of R 1278 (Ct). Pro Forma invoice processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R2 (Dt). A calculation error in the prior period resulting in and adjustment of R19 (Ct). Revenue relating to the 2019 financial year was incorrectly recognised in 2020. Consequently, revenue and the related trade and other receivables balance had been understated in 2019 financial year and overstated in 2020 financial year. Invalid accruals raised in the 2017, 2018 and 2019 financial years were incorrectly derecognized in the 2020 financial year as opposed to the respective year to which it relates. Consequently, trade and other payables and the related expense had been overstated in the 2018 and 2019 financial years, and retained earnings and the related expenses have been understated in the 2020 financial year resulting in a nett adjustment of R2 765 (Ct).

(28) Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R3 525 (Ct). Elimination of Right-of-use assets which relates to facilities leased by Pelchem from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R5 657 (Ct). In the 2019 and 2020 financial years, items of property, plant and equipment that had shown indicators of impairment, due to being idle and not producing to its maximum capacity, were assessed for impairment. However, the recoverable amount determined was incorrect resulting in an overstatement of the property, plant and equipment balance and related expense. Invalid accruals raised in the 2017, 2018 and 2019 financial years were incorrectly derecognized in the 2020 financial year as opposed to the respective year to which it relates. Consequently, trade and other payables and the related expense had been overstated in the 2018 and 2019 financial years, and retained earnings and the related expenses have been understated in the 2020 financial year. In the 2019 financial year the inventory listing did not agree to the trial balance, resulting in an overstatement of inventory and an understatement of cost of sales. Grants received from the Department of Science and Technology has incorrectly been recognized as revenue. This should be recognized as an payment received in advance. Consequently, overstating revenue and understating trade and other payables in the 2019 financial year resulting in a nett adjustment of R9 762 (Dt). Reclassified R3 (Dt) from Cost of sales to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R43 (Ct) from Other income to Cost of sales as it was incorrectly classified in the prior period. Reclassified R5 (Dt) from Other operating expenses to Cost of sales as it was incorrectly classified in the prior period.

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(29) Reclassified R610 114 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Correction of calculation error pertaining to Right of Use Assets amounting to an adjustment of R155 (Ct). A calculation error in the prior period resulting in and adjustment of R585 (Ct).Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R5 834 (Dt). Elimination of Right-of-use assets which relates to facilities leased by Pelchem from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R9 363 (Dt). In the 2020 financial year, uncollectable debt recovered had been incorrectly classified as income instead of recognising recovery against the bad debts expense account. Consequently, other income and other expenses had been overstated resulting in an adjustment of R4 613 (Dt). Reallocation of balances between Other income and Other operating expenses to allow for more accurate disclosure resulting in an adjustment of R47 739 (Ct). Reclassified R1 969 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R43 (Ct) from Other income to Cost of sales as it was incorrectly classified in the prior period. Other adjustments totalling R20 849 (Dt).

(30) Reclassified R3 828 (Ct) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income.Reclassified R7 136 (Dt) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income.

(31) Reclassified R5 198 (Ct) from Other operating expenses to Administration and fees on the face of the Statement of Comprehensive Income. Reclassified R3 828 (Ct) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income. Reclassified R610 114 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Adjusted to provide for the agreed audit fees for the 2020 financial period as per the audit engagement letter resulting in an adjustment of R8 886 (Dt). Adjustment of depreciation for investment property that was reclassified as property plant and equipment resulting in adjustment of R8 488 (Dt). Correction of a calculation error in the investment for future liability contribution resulting in an adjustment of R4 201 (Dt). Correction of a calculation error in the prior period expected credit loss resulting in an adjustment of R48 233 (Ct). Correction of a calculation error pertaining to Right of Use Assets resulting in an adjustment of R594 (Dt). Creditors invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R137 (Dt). Recalculation of expected credit loss resulting in an adjustment of R34 835 (Dt). Restatement after revaluation performed on Vaalputs resulting in a movement of R2 869 (Dt). A calculation error in the prior period resulting in and adjustment of R605 (Dt).Adjustment of the ECL for 2020 for elimination and roll forward of the 2019 ECL calculation adjustment resulting in an adjustment of R60 635 (Ct). Prior period error resulting in an adjustment of R11 297 (Dt). Provision for uncollectable debt that was not previously provided for resulting in a nett adjustment of R105 765 (Dt). Reallocation of balances between Other income and Other operating expenses to allow for more accurate disclosure resulting in an adjustment of R47 739 (Dt). Reclassified R1 969 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R3 (Dt) from Cost of sales to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R5 (Dt) from Other operating expenses to Cost of sales as it was incorrectly classified in the prior period. Reclassified R5 012 (Ct) from Accumulated loss to Other operating expenses as it was incorrectly classified in the prior period. Reclassified R7 136 (Dt) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income. Reclassified R95 865 (Dt) under consolidation from Other operating expenses to Administration and fees on the face of the Statement of Comprehensive Income. Reclassification of consolidation movement resulting in an adjustment of R51 952 (Dt). Other adjustments totalling R26 333 (Ct).

(32) Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R182 467 (Dt). A calculation error in the prior period resulting in and adjustment of R6 483 (Ct).

(33) Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R182 467 (Ct). A calculation error in the prior period resulting in and adjustment of R6 483 (Dt).

(34) Reclassified R5 198 (Ct) from Other operating expenses to Administration and fees on the face of the Statement of Comprehensive Income. Reclassified R95 865 (Dt) under consolidation from Other operating expenses to Administration and fees on the face of the Statement of Comprehensive Income.

(35) Restatement after revaluations performed on Decommissioning and Decontamination of Stage 1 resulting in a decrease in the finance income component of R36 162 (Dt). A calculation error in the prior period resulting in and adjustment of R6 483 (Dt).Prior period error resulting in an adjustment of R1 328 (Ct).

(36) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2020 movement the fair value increased with through fair value adjustments with R100 (Ct) and accumulated loss was increased (i.e. retained earnings was decreased) with the same amount.

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(37) Restatement after revaluations performed on Decommissioning and Decontamination of Stage 1 & 2 and Vaalputs resulting in a decrease in the finance cost component of R42 557 (Ct). A calculation error in the prior period resulting in and adjustment of R6 483 (Ct).Elimination of Right-of-use assets which relates to facilities leased by NTP Radioisotopes from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R3 118 (Ct). Elimination of Right-of-use assets which relates to facilities leased by Pelchem from NECSA, including the associated lease liability, finance expenses and lease income resulting in adjustment of R6 055 (Ct). Invalid accruals raised in the 2017, 2018 and 2019 financial years were incorrectly derecognized in the 2020 financial year as opposed to the respective year to which it relates. Consequently, trade and other payables and the related expense had been overstated in the 2018 and 2019 financial years, and retained earnings and the related expenses have been understated in the 2020 financial year resulting in an adjustment of R26 (Ct). Prior period error resulting in an adjustment of R1 214 (Dt).

(38) Correction of taxation due to the impact of correcting prior period errors resulting in an adjustment of R947 (Ct).

(39) Other adjustments totalling R5 487 (Dt).

(40) Correction of movement in Remeasurements on net defined benefit liability/assets on the face of the Statement of Comprehensive Income resulting in an adjustment of R7 064 (Ct).

(41) Revaluation of land and buildings resulting in a nett gain of R3 000 (Ct) for land and R3 636 (Ct) for buildings.

(42) Correction of movement in Fair value adjustment on financial assets on the face of the Statement of Comprehensive Income resulting in an adjustment of R11 (Dt).

(43) Correction of movement in Income tax relating to items that will not be reclassified on the face of the Statement of Comprehensive Income resulting in an adjustment of R1 263 (Dt).

(44) Correction of movement in Fair value through other comprehensive income adjustments on the face of the Statement of Comprehensive Income resulting in an adjustment of R4 163 (Dt).

(45) Reversed a journal posted in 2020 incorrectly passed in 2020 in response to an audit finding, resulting in an adjustment of R31 900 (Ct) (46) The value of the Vaalputs After Care Asset was misstated. The initial estimate of D&D Costs on the Vaalputs site should have been capitalised to the Vaalputs Asset and not through retained earnings. The asset increased in 2019 with R21 666 (Dt). Because of the increase in the value of the asset, depreciation of R361 was also provided for extra per year from 2020. (Ct)

Company			
Effect on the Consolidated Statement of Financial Position - Company - 2019	**Previous opening balance stated 2019**	**Restated opening balance2019**	**Net movement**
	R'000	**-**	**R'000**
Equity	-608,761	-594,564	-14,197
Accumulated loss (1)	-608,761	-594,564	-14,197
Non-Current Liabilities	-88,193	-97,952	9,759
Vaalputs After Care (liability) (2)	-88,193	-97,952	9,759
Current Liabilities	-93,854	-98,292	4,438
Trade and other payables (3)	-93,854	-98,292	4,438
	-790,808	**-790,808**	**-**

(1) Correcting the allocation of fair value movements

(2) Vaalputs calculation correction

(3) Cut-off corrections

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Effect on the Consolidated Statement of Financial Position - Company - 2019	Previously stated 2019	Restatement 2019	Net movement
	R'000	R'000	R'000
Non-Current assets	**5,924,442**	**4,591,919**	**1,332,523**
Property, plant and equipment (1)	867,662	1,082,095	-214,433
Investment property (2)	214,433	-	214,433
Decommissioning and Decontamination of Stage 1 (asset) (3)	4,561,755	3,330,790	1,230,965
Decommissioning and Decontamination of Stage 2 (asset) (4)	277,203	153,979	123,224
Vaalputs After Care Asset (28)	3,389	25,055	-21,666
Current Assets	**427,259**	**431,412**	**-4,153**
Trade and other receivables (5)	93,351	97,504	-4,153
Other financial assets (6)	317,191	312,074	5,117
Cash and cash equivalents (7)	16,717	21,834	-5,117
Equity	**-130,273**	**-214,321**	**84,048**
Reserves (8)	-601,679	-594,614	-7,065
Accumulated loss (9)	471,406	380,293	91,113
Non-Current Liabilities	**-5,981,873**	**-4,575,064**	**-1,406,809**
Vaalputs After Care (liability) (10)	-94,199	-43,241	-50,958
Deferred income (11)	-539,209	-539,976	767
Provisions (12)	-469,493	-464,373	-5,120
Investment contributions for future liabilities (13)	-40,014	-42,705	2,691
Decommissioning and Decontamination of Stage 1 (liab) (14)	-4,561,755	-3,330,790	-1,230,965
Decommissioning and Decontamination of Stage 2 (liab) (15)	-277,203	-153,979	-123,224
Current Liabilities	**-119,750**	**-114,140**	**-5,610**
Trade and other payables (16)	-62,554	-65,571	3,017
Provisions (Current) (17)	-57,196	-48,569	-8,627
	119,805	**119,805**	**-**

Effect on Statement of Comprehensive Income - Company - 2019	Previously stated 2019	Restatement 2019	Net movement
	R'000	R'000	R'000
Revenue (18)	-1,058,956	-1,072,370	13,414
Other income (19)	-364,611	-23,310	-341,301
Expected credit loss trade receivables (20)	149,539	62,627	86,912
Other operating expenses (21)	800,619	888,629	-88,010
Government Grant Income Decommissioning and Decontamination of Stage 1 & 2	-1,038,694	-25,806	-1,012,888
Acceptance of Decommission and Decontamination of Stage 1 & 2 (23)	1,302,963	-51,226	1,354,189
Investment income (24)	-270,716	-261,860	-8,856
Fair value adjustments (25)	-9,330	-10,042	712
Finance costs (26)	-5,219	-146,040	-151,259
Fair value through other comprehensive income adjustments (27)	664	-47	711
	-493,741	**-639,445**	**-146,376**

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Effect on the Cash Flows - Company - 2019	Previously stated 2019	Restatement 2019	Net movement
	R'000	R'000	R'000
Cash receipts from customers	1,019,754	1,697,566	-677,812
Cash paid to suppliers and employees	-1,135,621	-1,807,987	672,366
Interest income	36,638	27,782	8,856
Dividends received/(paid)	-	20,489	-20,489
Purchase of property, plant and equipment	-32,093	-32,143	50
Movement in financial assets	218,966	224,033	-5,067
Dividends received	20,489	-	20,489
Movement in investment contributions for future liabilities	2,321	5,012	-2,691
Movement in deferred Grant Income	-17,296	-16,529	-767
	113,158	**118,275**	**-5,117**

(1) Reclassified R214 433 (Dt) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit. An impairment provision of R82 802 (Ct) was reclassified from Cost to Accumulated Depreciation / Impairment and this had a net effect of zero on the carrying value.

(2) Reclassified R214 413 (Ct) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit.

(3) Restatement of Government grant component after revaluation performed resulting in a movement of R1 230 965 (Ct)

(4) Restatement of Government grant component after revaluation performed resulting in a movement of R123 224 (Ct).

(5) An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R52 (Ct). An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R4 207 (Dt).

(6) Reclassified R5 117 (Dt) from Other financial assets to Cash and cash equivalents as this relates to a bank account that was incorrectly classified in the prior period under Other financial assets.

(7) Reclassified R5 117 (Dt) from Other financial assets to Cash and cash equivalents as this relates to a bank account that was incorrectly classified in the prior period under Other financial assets.

(8) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount.

(9) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount. The remaining of the adjustments relate to adjustments to the Statements of Comprehensive income accounts where accumulated loss was effected as the contra account. The value of the Vaalputs After Care Asset was misstated. The initial estimate of D&D Costs on the Vaalputs site should have been capitalised to the Vaalputs Asset and not through retained earnings. Retained earnings increased in 2019 with R21 666 (Ct).

(10) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial position for comparison to the required funds to discharge Vaalputs after care in future. Restatement after revaluation performed resulting in a movement of R46 319 (Dt). Reversal of a journal that was incorrectly posted in the prior period resulting in a movement of 9 759 (Dt).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(11) Reclassified R767 (Ct) from Trade and other payables to Deferred income as it was incorrectly classified in the prior period.

(12) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial positon for comparison to the required funds to discharge Vaalputs after care in future.

(13) Restatement after revaluation performed resulting in a movement of R2 691 (Ct)

(14) Restatement of Government grant component after revaluation performed resulting in a movement of R1 230 965 (Dt)

(15) Restatement of Government grant component after revaluation performed resulting in a movement of R123 224 (Dt).

(16) Reclassified R8 627 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period. Reclassified R767 (Ct) from Trade and other payables to Deferred income as it was incorrectly classified in the prior period. An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R403 (Dt). An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R20 (Ct). Opening balance correction against retained earnings resulting in an adjustment of R4 458 (Dt).

(17) Reclassified R8 627 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period.

(18) An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R350 (Ct). An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R13 064 (Ct).

(19) Reclassified R341 301 (Ct) from Other income to Government Grant Income as Other income was split into different sections for this year on the face of the Statement of comprehensive income.

(20) Reclassified R86 912 (Dt) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income.

(21) Reclassified R86 912 (Dt) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income. Provided for extra depreciation on Vaalputs After Care asset of R361 (Dt)

(22) Reclassified R341 301 (Ct) from Other income to Government Grant Income as Other income was split into different sections for this year on the face of the Statement of comprehensive income. Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R1 354 188 (Dt).

(23) Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R1 354 188 (Ct).

(24) An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R8 856 (Dt).

(25) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 movement the fair value decreased with through fair value adjustments with R711 (Dt) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount.

(26) Restatement after revaluations performed on Decommissioning and Decontamination of Stage 1 & 2 and Vaalputs resulting in a decrease in the finance cost component of R78 760 (Ct).

(27) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 movement the fair value decreased through other comprehensive income adjustments with R711 (Ct).

(28) The value of the Vaalputs After Care Asset was misstated. The initial estimate of D&D Costs on the Vaalputs site should have been capitalised to the Vaalputs Asset and not through retained earnings. The asset increased in 2019 with R21 666 (Dt).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Effect on the Consolidated Statement of Financial Position - Company - 2020	Previously stated 2020	Restatement 2020	Net movement
	R'000	R'000	R'000
Non-Current assets	**5,641,994**	**4,087,879**	**1,554,115**
Property, plant and equipment (1)	825,596	1,037,434	-211,838
Investment property (2)	215,183	-	215,183
Right-of-use assets (3)	10,107	9,357	750
Intangible assets (4)	-	1,493	-1,493
Decommissioning and Decontamination of Stage 1 (asset) (5)	4,346,295	2,901,145	1,445,150
Decommissioning and Decontamination of Stage 2 (asset) (6)	241,800	114,132	127,668
Vaalputs After Care Asset (31)	3,013	24,318	-21,305
Current Assets	**59,360**	**76,264**	**-16,904**
Trade and other receivables (7)	42,731	59,634	-16,903
Cash and cash equivalents (8)	16,629	16,630	-1
Equity	**14,047**	**-69,481**	**83,528**
Reserves (9)	-601,119	-602,756	1,637
Accumulated loss (10)	615,166	533,275	81,891
Non-Current Liabilities	**-5,236,054**	**-3,610,731**	**-1,625,323**
Vaalputs After Care (liability) (11)	-101,076	-46,592	-54,484
Provisions (12)	-503,851	-502,932	-919
Investment contributions for future liabilities (13)	-43,032	-45,930	2,898
Decommissioning and Decontamination of Stage 1 (liability) (14)	-4,346,295	-2,901,145	-1,445,150
Decommissioning and Decontamination of Stage 2 (liability) (15)	-241,800	-114,132	-127,668
Current Liabilities	**-306,420**	**-311,003**	**4,583**
Trade and other payables (16)	-121,144	-136,613	15,469
Provisions (Current) (17)	-59,746	-51,485	-8,261
Amounts received in advance (29)	-125,530	-157,430	31,900
Deferred income (30)	-	34,525	-34,525
	172,927	**172,927**	**-**

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

Effect on Statement of Comprehensive Income - Company - 2020	Previously stated 2020	Restatement 2020	Net movement
	R'000	R'000	R'000
Revenue (18)	-1,137,351	-1,136,321	-1,030
Other income (19)	-18,444	-17,695	-749
Expected credit loss trade receivables (20)	102,000	105,828	-3,828
Other operating expenses (21)	821,151	826,446	-5,295
Government Grant Income Decommissioning and Decontamination of Stage 1 & 2	522,636	698,620	-175,984
Acceptance of Decommission and Decontamination of Stage 1 & 2 (23)	-522,636	-698,620	175,984
Administration and fees (24)	132,628	137,826	-5,198
Investment income (25)	-311,447	-268,801	-42,646
Fair value adjustments (26)	6,909	7,010	-101
Finance costs (27)	282,400	233,360	49,040
(Losses) Gains on property revaluation (28)	-	-6,846	6,846
Fair value through other comprehensive income adjustments (27)	-560	-460	-100
	-122,714	**-121,995**	**-719**

Effect on the Cash Flows - Company - 2020	Previously stated 2020	Restatement 2020	Net movement
Cash receipts from customers	1,158,127	1,122,384	35,743
Cash paid to suppliers and employees	-1,262,321	-1,226,021	-36,300
Purchase of property, plant and equipment	-21,603	-20,110	-1,493
Purchase of other intangible assets	-	-1,493	1,493
Movement in financial assets	-38,971	-44,083	5,112
Dividends received	546	-	546
Movement in investment contributions for future liabilities	3,018	3,225	-207
Movement in deferred Grant Income	181,814	181,047	767
Cash at the beginning of the year	-3,283	1,834	-5,117
	17,327	**16,783**	**544**

(1) Reclassified R215 183 (Dt) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit. Reclassified R1 493 (Dt) from Property, plant and equipment to Intangible assets as this represents computer software. Depreciation amounting to R8 488 calculated on buildings re-classified to Property, plant and equipment that were previously classified as Investment Property. Revaluation of land and buildings resulting in a nett movement of R3 000 (Dt) for land and R3 636 (Dt) for buildings. An impairment provision of R82 802 (Ct) was reclassified from Cost to Accumulated Depreciation / Impairment and this had a net effect of zero on the carrying value.

(2) Reclassified R215 183 (Ct) from Investment property to Property, plant and equipment based on the recommendation from the Auditors during the 2020 financial period audit.

(3) Previously partial depreciation was recorded incorrectly as both the debit and credit leg was posted against the income statement R85 (Ct) for leased vehicles and R8 (Ct) for leased equipment. Correction of calculation error pertaining to Right of Use Assets amounting to an adjustment of R656 (Ct).

(4) Reclassified R1 493 (Dt) from Property, plant and equipment to Intangible assets as this represents computer software.

(5) Restatement of Government grant component after revaluation performed resulting in a movement of R1 408 987 (Ct) and resulting finance income movement of R36 163 (Ct).

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(6) Restatement of Government grant component after revaluation performed resulting in a movement of R127 669 (Ct).

(7) An adjustment to the Caseware system to align to the Solomon system resulting in an adjustment of R4 207 (Dt). Invoices issued in the incorrect accounting period, subsequently corrected resulting in an adjustment of R1 278 (Dt). Intergroup invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R26 (Dt). Creditors invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R21 (Dt). Pro Forma invoice processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R2 (Ct). Correction of a calculation error in the prior period expected credit loss, resulting in an adjustment of R11 376 (Dt).

(8) Reclassified less than R1 (Dt) from Cash and cash equivalents to Other financial assets due to incorrect classification under Other financial assets in the prior period.

(9) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount. For 2020 the movement adjustment was R100 (Ct), but the reserve increased and retained earnings decreased. Revaluation of land and buildings resulting in the following movement in the associated revaluation reserve of R3 000 (Ct) for land and R3 636 (Ct) for buildings.

(10) The Fair value through other comprehensive income reserve opening balance and the prior year movements were misstated. This was corrected in the current year to agree the opening balance and the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 opening balance and movement the fair value decreased through other comprehensive income reserve with R7 065 (Dt) (R6 354 opening balance and 711 movement) and accumulated loss was decreased (i.e. retained earnings was increased) with the same amount. For 2020 the movement adjustment was R100 (Ct), but the reserve increased and retained earnings decreased. The remaining of the adjustments relate to adjustments to the Statements of Comprehensive income accounts where accumulated loss was effected as the contra account.

(11) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial position for comparison to the required funds to discharge Vaalputs after care in future. Restatement after revaluation performed resulting in a movement of R59 604 (Dt).

(12) Reclassified R5 120 (Ct) from Provisions to Vaalputs After Care (liab) so that the portion of the liability that is already funded and the provision relating to Vaalputs can be identified on the face of the Statement of Financial position for comparison to the required funds to discharge Vaalputs after care in future. Revaluation of Waste Drums After Care resulting in a movement of 4 201 (Ct).

(13) Restatement after revaluation performed resulting in a movement of R2 898 (Ct)

(14) Restatement of Government grant component after revaluation performed resulting in a movement of R1 408 987 (Dt) and resulting finance income movement of R36 163 (Dt).

(15) Restatement of Government grant component after revaluation performed resulting in a movement of R127 669 (Dt).

(16) Reclassified R8 621 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period. Adjusted to provide for the agreed upon audit fees for the 2020 financial period as per the audit engagement letter resulting in an adjustment of R8 885 (Ct). Correction of a calculation error in the prior period expected credit loss, resulting in an adjustment of R24 (Dt). Creditors invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R158 (Ct). Intergroup invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R3 (Ct). Opening balance correction against retained earnings resulting in an adjustment of R4 438 (Dt). Pro Forma invoice processed in the incorrect financial period, subsequently corrected resulting in an adjustment of less than R1 (Dt). Reversed a journal posted in 2020 incorrectly passed in 2020 in response to an audit finding, resulting in an adjustment of R2 626 (Ct)

(17) Reclassified R8 621 (Ct) from current Provisions to Trade and other payables as it was incorrectly classified in the prior period.

Notes to the Annual Financial Statements

38. PRIOR PERIOD ERRORS (CONTINUED)

(18) An invoice was issued in US dollars instead of South African rand, subsequently a credit note and replacement invoice was issued in order to correct this resulting in an adjustment of R350 (Dt). Correction of a calculation error in the prior period expected credit loss, resulting in an adjustment of R1 997 (Dt). Intergroup invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R22 (Ct). Invoices issued in the incorrect accounting period, subsequently corrected resulting in an adjustment of R 1278 (Ct). Pro Forma invoice processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R2 (Dt). A calculation error in the prior period resulting in and adjustment of R19 (Ct).

(19) Reclassified R610 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Correction of calculation error pertaining to Right of Use Assets amounting to an adjustment of R155 (Ct). A calculation error in the prior period resulting in and adjustment of R585 (Ct).

(20) Reclassified R3 828 (Ct) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income.

(21) Reclassified R5 198 (Ct) from Other operating expenses to Administration and fees on the face of the Statement of Comprehensive Income. Reclassified R3 828 (Ct) from Other operating expenses to Expected credit loss trade receivables on the face of the Statement of Comprehensive Income. Reclassified R610 (Ct) from Other income to Other operating expenses as it was incorrectly classified in the prior period. Adjusted to provide for the agreed audit fees for the 2020 financial period as per the audit engagement letter resulting in an adjustment of R8 886 (Dt). Adjustment of depreciation for investment property that was reclassified as property plant and equipment resulting in adjustment of R8 488 (Dt). Correction of a calculation error in the investment for future liability contribution resulting in an adjustment of R4 201 (Dt). Correction of a calculation error in the prior period expected credit loss resulting in an adjustment of R48 233 (Ct). Correction of a calculation error pertaining to Right of Use Assets resulting in an adjustment of R594 (Dt). Creditors invoices processed in the incorrect financial period, subsequently corrected resulting in an adjustment of R137 (Dt). Recalculation of expected credit loss resulting in an adjustment of R34 835 (Dt). Restatement after revaluation performed on Vaalputs resulting in a movement of R2 869 (Dt). A calculation error in the prior period resulting in and adjustment of R605 (Dt).

(22) Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R182 467 (Dt).

(23) Restatement after revaluation on Decommissioning and Decontamination of Stage 1 & 2 resulting in a movement of R182 467 (Ct).

(24) Reclassified R5 198 (Ct) from Other operating expenses to Administration and fees on the face of the Statement of Comprehensive Income.

(25) Restatement after revaluations performed on Decommissioning and Decontamination of Stage 1 resulting in a decrease in the finance income component of R36 162 (Dt).

(26) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2020 movement the fair value increased with through fair value adjustments with R100 (Ct) and accumulated loss was increased (i.e. retained earnings was decreased) with the same amount.

(27) Restatement after revaluations performed on Decommissioning and Decontamination of Stage 1 & 2 and Vaalputs resulting in a decrease in the finance cost component of R42 557 (Ct).

(28) The Fair value through other comprehensive income reserve prior year movements were misstated. This was corrected in the current year to agree the movements to the cumulative adjustments to the fair values of the underlying financial instruments which pertain to Necsa. For the 2019 movement the fair value decreased through other comprehensive income adjustments with R100 (Dt).

(29) Reversed a journal posted in 2020 incorrectly passed in 2020 in response to an audit finding, resulting in an adjustment of R31 900 (Ct) (30) Reversed a journal posted in 2020 incorrectly passed in 2020 in response to an audit finding, resulting in an adjustment of R34 526 (Dt) (31) The value of the Vaalputs After Care Asset was misstated. The initial estimate of D&D Costs on the Vaalputs site should have been capitalised to the Vaalputs Asset and not through retained earnings. The asset increased in 2019 with R21 666 (Dt). Because of the increase in the value of the asset, depreciation of R361 was also provided for extra per year from 2020. (Ct)

Notes to the Annual Financial Statements

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.

Despite the previous losses that Necsa have made historically, the company has a track record of continuing in operation, wherein this resilience will continue into the foreseeable future. Section 12 of the Nuclear Energy Act supports the mandate of the company in support of the going concern. Furthermore, Necsa has the ability to pay its short-term obligations, which it will do through the initiatives documented including through working capital management, austerity measure implementation, increasing revenue streams and prioritization of cash generating projects to name a few.

Management is aware of the material uncertainties as a result of the historic losses and negative ratios, and has embarked on a recovery plan premised on a Necsa turnaround strategy to ensure continued sustainability. This strategy is premised in the main on cost efficiency and diligent cost saving initiatives underway within the organization as well as growth initiatives to increase revenue streams. Various projects have also been undertaken to remedy the financial situation including the rehabilitation of the balance sheet situation. All of the various initiatives including the strategic projects underway are closely tracked and monitored to ensure the effectiveness of the plans underway. The entity remains resilient with the current success and positive results of the initiatives underway evident in the forecasts to March 2022 and the current performance of the organization post the March 2021 year end. Necsa is appreciative of the continuing support from the Shareholder which in addition to the various initiatives underway is supportive of the Necsa going concern consideration.

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000

40. PUBLIC FINANCE MANAGEMENT ACT

Fruitless and wasteful expenditure:						
Opening balance	6,992	4,233	152	156	364	130
Add irregular expenditure	174	2,980	4,084	21	13	237
Recoveries made	(4)	(221)	(3)	(4)	(221)	(3)
Fruitless and wasteful expenditure unresolved	**7,162**	**6,992**	**4,233**	**173**	**156**	**364**

Fruitless & Wasteful Expenditure for Necsa standalone Company:

- R21,000 new additions: Relates to salary-related overpayments as a result of resignations and/or terminations for various reasons and upon the calculation of leave due, it was discovered that the said employees actually owed Necsa for leave taken in excess of available days. In this regard, some of the former employees are currently paying back in instalments and others are still being pursued.
- The rest of the old amounts are being pursued either through legal processes and/or through repayment arrangements that have been made emanating from signed Acknowledgement of debts.

Criminal or disciplinary steps:

For NTP Logistics SOC Ltd on 29 May 2019 fraudulent transactions were identified and a criminal case was opened with the South African Police. Most of these transactions took place in May 2019. These investigations and related legal actions are still ongoing.

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 Chief Executive Officer as appropriate.

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	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	443,670	409,047	74,213	324,940	314,659	28,364
Non-adherence to procurement process (2)	32,146	34,623	69,875	8,512	10,281	21,295
Ring-fenced funds utilised (1)	-	-	265,000	-	-	265,000
Less: Amounts condoned	-	-	(41)	-	-	-
	475,816	**443,670**	**409,047**	**333,452**	**324,940**	**314,659**

* Figures restated - refer to note 38

Note 1: The Auditor General stated that a Board resolution or Minister approval was not obtained, when the NTP Fuel Elements disposal funds were withdrawn from investments and was instead used for financial operational expenses, as is required by the Nuclear Energy Act section 18(4), Nuclear Energy Act section 26 and section 27 of the Companies Act. The Company had obtained the permission to utilise these funds for operational expenditure from both the Board and the Minister. However, the Minister approved the submission without appending his signature to the approval. This constitute a restatement from 2018/19 year of assessment.

2021 progress update on R265m: the internal audit unit of Necsa has done an investigation and issued a report in this regard. The said report has been sent to National Treasury as support for consideration of a request to condone this amount. This relates to funds that were used in 2018/19 as per approval by the Board, however, considering that the amount required Ministerial approval, a request was sent to the Department of Mineral Resources and Energy (DMRE) which was consequently approved. However, the Auditor-General as well as Internal Audit could not verify the authenticity of the said approval, hence the amount was then disclosed as irregular. DMRE was consulted in this regard and they recommended that this matter be submitted to National Treasury for condonation.

Note 2: 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.

Note 3: The old amounts are being investigated internally and once finalized, these will be cleared based on the investigation reports.

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 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 Minerals Resources and Energy (DMRE), and is subjected to the Policies and Procedures designed by the DMRE.

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 Licence".

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 Acting Chief Executive Officer of the NNR for a nuclear installation licence 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.

Notes to the Annual Financial Statements

41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

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 Mineral Resources and Energy. Necsa is responsible for discharging of the liabilities and government is responsible for funding thereof.

In 2000 Necsa was requested by the then DMRE 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 DMRE, a Nuclear Liabilities Management Plan (NLMP). The NLMP differentiated between three stages of D&D, namely:

- Stage 1- Decommissioning and Decontamination of all disused historical nuclear facilities;
- Stage 2- Decommissioning and Decontamination of all remaining (currently operating as at 2004) nuclear facilities

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.

In order to provide a monitoring mechanism for effective oversight of the implementation of the approved 2005 Cabinet resolutions, DMRE 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 DMRE 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 DMRE 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 DMRE.

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 DMRE; 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 R3.4 billion as at 31 March 2021 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.

The initial 2018/19 liability reassessment that was conducted by Necsa was not accepted by the 2019 independent review team (Crosland Consulting) for the following reasons:

a. Concern that the methodology assumed end date of 2033 is not realistic and attainable

b. No justification/detailed long term plan to substantiate the remaining years of the 2033 end date

c. Indirect/overhead cost not sufficient (was less than 2013/14 +CPI). This approach was based on the 2013/14 methodology as agreed to base 2018/19 assessment.

d. Queries in the facility inventory and D&D assessments

Notes to the Annual Financial Statements

41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

The above, required corrective measures to be implemented, another 2018/19 reassessment conducted and reviewed by the 2020 independent review team, The R5.5 Billion was confirmed/accepted as a reasonable estimates compared to the previously assessed R3.6 Billion that was rejected by the review team. The reason for the increase was mainly due to the following:

- The high level long term plans for Waste Management and Decommissioning activities that were developed, after being identified as a shortcoming by the independent expert reviewer from the previous reassessment that was not accepted by the independent review team.
- These long term plans pushed the projects from 2033 to 2040 increasing the project end date by seven (7) years.
- The negative impact of the underfunding over the past years that delayed the execution of the projects also contributed to this estimate although additional funding was provided in 2018.

An independent international expert, Crossland Consulting Ltd, has confirmed that the 2020 assessment methodology used to determine the liability provides a reasonable central estimate of the ongoing liability, as such it provides a reasonable figure for the purpose of securing government funding

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		
	2021	2020	2019	2021	2020	2019
	R'000	R'000	R'000	R'000	R'000	R'000
Non-current assets						
Decommissioning & decontamination - Stage 1	3,411,338	2,901,145	3,330,790	3,411,338	2,901,145	3,330,790
Non-current liabilities						
Decommissioning & decontamination - Stage 1	(3,411,338)	(2,901,145)	(3,330,790)	(3,411,338)	(2,901,145)	(3,330,790)
	-	-	-	-	-	-
Government grant income (Decommissioning & decontamination - Stage 1 & 2)	352,013	(698,620)	(315,495)	352,013	(698,620)	(315,495)
Acceptance of Decommissioning & decontamination - Stage 1 & 2	(352,013)	698,620	315,495	(352,013)	698,620	315,495
	-	-	-	-	-	-

2021	Opening	Finance Charge / Finance Income	Change in discount factor	Total
	R'000	R'000	R'000	R'000
Assets	2,901,145	187,296	322,897	3,411,338
Liabilities	(2,901,145)	(187,296)	(322,897)	(3,411,338)
	-	-	-	-

2020	Opening	Finance Charge / Finance Income	Change in discount factor	Total
	R'000	R'000	R'000	R'000
Assets	3,330,790	216,732	(646,377)	2,901,145
Liabilities	(3,330,790)	(216,732)	646,377	(2,901,145)
	-	-	-	-

2019	Opening	Finance Charge / Finance Income	Change in discount factor	Total
	R'000	R'000	R'000	R'000
Assets	3,309,472	213,589	(192,271)	3,330,790
Liabilities	(3,309,472)	(213,589)	192,271	(3,330,790)
	-	-	-	-

Notes to the Annual Financial Statements

41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

Stage 2 Liabilities

The Stage 2 facilities are currently in operation and these facilities will only be Decommissioned and Decontaminated once operations cease.

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. 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 Minerals Resources and Energy (DMRE) 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 DMRE 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 IAS37.

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) as of 2018/19 financial year, 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 (received)

2020/21: R 20.2 million (received)

2021/22: R 22.5 million (committed)

2022/23: R 23.3 million (committed)

Please refer to note 38 as Decommissioning and Decontamination on stage 1 and 2 for both the assets and liabilities were restated due to a prior year error.

Notes to the Annual Financial Statements

41. DECOMMISSIONING AND DECONTAMINATION (CONTINUED)

	Group			Company		
	2021	2020	2019	2021	2020	2019
	R'000	R'000	R'000	R'000	R'000	R'000
Non-current assets						
Decommissioning & decontamination - Stage 2	3,411,338	2,901,145	3,330,790	3,411,338	2,901,145	3,330,790
Non-current liabilities						
Decommissioning & decontamination - Stage 2	(3,411,338)	(2,901,145)	(3,330,790)	(3,411,338)	(2,901,145)	(3,330,790)
	-	-	-	-	-	-
Government grant income (Decommissioning & decontamination - Stage 1 & 2)	352,013	(698,620)	(315,495)	352,013	(698,620)	(315,495)
Acceptance of Decommissioning & decontamination - Stage 1 & 2	(352,013)	698,620	315,495	(352,013)	698,620	315,495
	-	-	-	-	-	-

2021	Opening	Finance Charge / Finance Income	Change in discount factor	Total
	R'000	R'000	R'000	R'000
Assets	114,132	2,517	29,116	145,764
Liabilities	(114,132)	(2,517)	(29,116)	(145,764)
	-	-	-	-

2020	Opening	Finance Charge / Finance Income	Change in discount factor	Total
	R'000	R'000	R'000	R'000
Assets	153,979	12,395	(52,242)	114,132
Liabilities	(153,979)	(12,395)	52,242	(114,132)
	-	-	-	-

2019	Opening	Finance Charge / Finance Income	Change in discount factor	Total
	R'000	R'000	R'000	R'000
Assets	277,203	-	(123,224)	153,979
Liabilities	(277,203)	-	123,224	(153,979)
	-	-	-	-

42. VAALPUTS AFTER CARE

	Group			Company		
	2021	2020	2019	2021	2020	2019
		Restated *	Restated *		Restated *	Restated *
	R'000	R'000	R'000	R'000	R'000	R'000
Non-current Asset	23,582	24,318	25,055	23,582	24,318	25,055
Non-current liabilities	(50,203)	(46,592)	(43,241)	(50,203)	(46,592)	(43,241)
	(26,621)	**(22,274)**	**(18,186)**	**(26,621)**	**(22,274)**	**(18,186)**

Notes to the Annual Financial Statements

42. VAALPUTS AFTER CARE (CONTINUED)

2021	Opening	Depreciation	Change in discount factor	Total
	R'000		R'000	R'000
Vaalputs After Care Non-current asset	24,318	(737)	-	23,581
Vaalputs After Care non-current liabilities	(46,592)	-	(3,611)	(50,203)
	(22,274)	**(737)**	**(3,611)**	**(26,622)**

2020	Opening	Depreciation	Change in discount factor	Total
	R'000		R'000	R'000
Vaalputs After Care Non-current asset	25,055	(737)	-	24,318
Vaalputs After Care non-current liabilities	(43,241)	-	(3,351)	(46,592)
	(18,186)	**(737)**	**(3,351)**	**(22,274)**

2019	Opening	Depreciation	Capitalisation of asset	Change in discount factor	Total
	R'000			R'000	R'000
Vaalputs After Care Non-current asset	3,766	(377)	21,666	-	25,055
Vaalputs After Care non-current liabilities	(89,561)	-	-	46,320	(43,241)
	(85,795)	**(377)**	**21,666**	**46,320**	**(18,186)**

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 Mineral Resources and 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 Mineral Resources and 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, DMRE 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. To date the NNR still did not issue NRWDI with the Nuclear Installation License.

Vaalputs is required to make provision in a Long Term Provision fund to cover the costs which will be incurred during the institutional control period of Vaalputs. This is a period of total 300 years after closure of the disposal site, and also called Aftercare. Contributions to this fund should be made to the fund during the operational period of Vaalputs (currently foreseen until 2054), thus ensuring that sufficient funds are available by the start of the institutional control period for these 300 years.

Provision was made for this fund and annually contributions were made. A methodology and model was developed and documented by Necsa to determine and assess on an annual basis the total required provision which would be required by Vaalputs closure in current terms. This model also compares the determined required provision with the current total provision/asset, and then also determines the annual contributions required for the remainder of the operational period of Vaalputs..

The model considers all the projected operational expenses during the control period, investment return, inflation, site closure date, etc.

The model is run each year to reassess and compare the actual investment performance with the then projected current required provision, and the required annual fund contribution. The statement above reflects the current actual provision/investment as non-current Asset, and the model determined required current provision as non-current liabilities. The difference will be addressed by the model-determined further annual contributions which will be made until site closure.

Please refer to note 38 as Vaalputs After Care was restated due to a prior year error.

Notes to the Annual Financial Statements

43. INVESTMENT CONTRIBUTIONS FOR FUTURE LIABILITIES

This represents contributions invested / ring fenced for the future decommissioning of facilities.

	2020	Additions	2021
	R'000	R'000	R'000
NTP - Decommissioning and Decontamination of buildings exclusively utilised	23,879	701	24,580
NTP Contribution to the Decommissioning and Decontamination of the Reactor / Safari-1	22,051	12,118	34,169
	45,930	**12,819**	**58,749**

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.

2021	Opening	Additions	Total
	R'000	R'000	R'000
NTP - Decommissioning and Decontamination of buildings exclusively utilised	(23,879)	(701)	(24,580)
NTP Contribution to the Decommissioning and Decontamination of the Reactor / Safari-1	(22,051)	(12,118)	(34,169)
	(45,930)	**(12,819)**	**(58,749)**

2020	Opening	Additions	Total
	R'000	R'000	R'000
NTP - Decommissioning and Decontamination of buildings exclusively utilised	(22,229)	(1,650)	(23,879)
NTP Contribution to the Decommissioning and Decontamination of the Reactor / Safari-1	(20,476)	(1,575)	(22,051)
	(42,705)	**(3,225)**	**(45,930)**

2019	Opening	Additions	Total
	R'000	R'000	R'000
NTP - Decommissioning and Decontamination of buildings exclusively utilised	(21,254)	(975)	(22,229)
NTP Contribution to the Decommissioning and Decontamination of the Reactor / Safari-1	(16,439)	(4,037)	(20,476)
	(37,693)	**(5,012)**	**(42,705)**

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.

Notes to the Annual Financial Statements

		Group			Company		
	Note(s)	2021	2020 Restated *	2019 Restated *	2021	2020 Restated *	2019 Restated *
		R'000	R'000	R'000	R'000	R'000	R'000

44. FAIR VALUE INFORMATION (CONTINUED)

Levels of fair value measurements

Level 1							
Recurring fair value measurements							
Assets	Note(s)						
Investments in associates at fair value	7						
Investments in unlisted associates		7,198	4,927	4,333	2	2	2
Financial assets measured at fair value through other comprehensive income	9						
Listed shares		1,055	881	1,452	1,026	856	1,416
Unit trusts		263,875	216,672	193,939	263,875	216,672	193,939
Total financial assets measured at fair value through other comprehensive income		**264,930**	**217,553**	**195,391**	**264,901**	**217,528**	**195,355**
Liabilities	Note(s)						
Other							
Bank overdraft		14,004	23,909	45,959	-	188	20,000
Total		**258,124**	**195,588**	**364,249**	**264,903**	**217,340**	**175,355**

(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

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)						
Liabilities	Note(s)						
Other							
Other financial liabilities		12,938	16,553	6,371	10,895	83	1,118
Leases		4,351	6,130	6,889	3,057	5,252	3,225
Total other		**17,289**	**22,683**	**13,260**	**13,952**	**5,335**	**4,343**
Total		**(17,289)**	**(91,892)**	**24,206**	**(13,952)**	**(5,252)**	**(197,164)**

All are recurring fair value measurements except Pelchem.

() 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.

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

	Note(s)	Group			Company		
		2021	2020	2019	2021	2020	2019
			Restated *	Restated *		Restated *	Restated *
		R'000	R'000	R'000	R'000	R'000	R'000

44. FAIR VALUE INFORMATION (CONTINUED)

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. 1

Highest and best use

All of the assets' current use are the highest and best use.

45. 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.

Loans from group companies		-	-	-	49,106	46,223	42,533
Other financial liabilities	16	12,944	16,553	6,371	10,895	83	1,118
Lease liabilities	17	4,349	6,131	6,889	3,057	5,252	3,225
Trade and other payables	21	259,281	224,850	539,368	132,030	136,614	65,572
Total borrowings		**276,574**	**247,534**	**552,628**	**195,088**	**188,172**	**112,448**
Cash and cash equivalents	13	(155,730)	(179,001)	(328,841)	(21,151)	(16,442)	(1,834)
Net borrowings		**120,844**	**68,533**	**223,787**	**173,937**	**171,730**	**110,614**
Equity		597,324	968,920	996,760	(59,899)	50,382	194,861
Gearing ratio		20 %	16 %	43 %	(290)%	(1,050)%	138 %

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 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 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.

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:

* Figures restated - refer to note 38

Notes to the Annual Financial Statements

45. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

Group		2021			2020			2019		
		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
		R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Trade and other receivables	12	383,933	(59,239)	324,694	480,232	(89,914)	390,318	628,836	(32,562)	596,274
Cash and cash equivalents	13	169,734	-	169,734	202,910	-	202,910	374,800	-	374,800
		553,667	**(59,239)**	**494,428**	**683,142**	**(89,914)**	**593,228**	**1,003,636**	**(32,562)**	**971,074**

Company		2021			2020			2019		
		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
		R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Loans to group companies	8	-	-	-	84,784	-	84,784	50,351	-	50,351
Trade and other receivables	12	412,775	(262,840)	149,935	354,759	(291,292)	63,467	307,683	(185,464)	122,219
Cash and cash equivalents	13	21,151	-	21,151	16,630	-	16,630	21,834	-	21,834
		433,926	**(262,840)**	**171,086**	**456,173**	**(291,292)**	**164,881**	**379,868**	**(185,464)**	**194,404**

Notes to the Annual Financial Statements

45. 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 - 2021					
		Less than 1 year	2 to 5 years	Total	Carrying amount
		R'000	R'000	R'000	R'000
Non-current liabilities					
Lease liabilities	17	-	2,851	2,851	2,851
Current liabilities					
Trade and other payables	21	230,545	-	230,545	227,919
Financial liabilities at fair value	16	12,944	-	12,944	12,944
Lease liabilities	17	1,873	-	1,873	1,873
Bank overdraft	13	14,004	-	14,004	14,004
		259,366	**2,851**	**262,217**	**259,591**

Group - 2020					
		Less than 1 year	2 to 5 years	Total	Carrying amount
		R'000	R'000	R'000	R'000
Non-current liabilities					
Lease liabilities	17	-	2,501	2,501	2,501
Current liabilities					
Trade and other payables	17	214,032	-	214,032	211,406
Financial liabilities at fair value	16	14,234	-	14,234	15,297
Lease liabilities	17	4,135	-	4,135	4,135
Bank overdraft	13	23,909	-	23,909	23,909
		256,310	**2,501**	**258,811**	**257,248**

Group - 2019					
		Less than 1 year	2 to 5 years	Total	Carrying amount
		R'000	R'000	R'000	R'000
Non-current liabilities					
Finance lease liabilities	17	-	4,164	4,164	4,164
Current liabilities					
Trade and other payables	21	535,802	-	535,802	535,802
Financial liabilities at fair value	16	1,963	-	1,963	1,963
Finance lease liabilities	17	3,645	-	3,645	3,645
Bank overdraft	13	45,959	-	45,959	45,959
		587,369	**4,164**	**591,533**	**591,533**

Notes to the Annual Financial Statements

45. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

Company - 2021							
		Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total	Carrying amount
		R'000	R'000		R'000	R'000	R'000
Non-current liabilities							
Lease liabilities	17	-	-	1,082	-	1,082	1,082
Current liabilities							
Trade and other payables	17	117,156	-	-	-	117,156	114,530
Loans from group companies		49,106	-	-	-	49,106	49,106
Financial liabilities at fair value	16	10,895	-	-	-	10,895	10,895
Lease liabilities	17	2,284	-	-	-	2,284	2,284
		179,441	**-**	**1,082**	**-**	**180,523**	**177,897**

Company - 2020							
		Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total	Carrying amount
		R'000	R'000		R'000	R'000	R'000
Non-current liabilities							
Lease liabilities	17	-	-	2,077	-	2,077	2,077
Current liabilities							
Trade and other payables	21	136,614	-	-	-	136,614	133,988
Loans from group companies		46,226	-	-	-	46,226	46,226
Financial liabilities at fair value	16	83	-	-	-	83	83
Lease liabilities	17	3,571	-	-	-	3,571	3,571
Bank overdraft	13	188	-	-	-	188	188
		186,682	**-**	**2,077**	**-**	**188,759**	**186,133**

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.

US Dollar exposure:

Notes to the Annual Financial Statements

45. INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

Current assets:							
Trade and other receivables	12	118,382	138,899	83,433	12,223	50,698	10,020
Cash and cash equivalents	13	415	14,789	6,006	-	1,605	-
Payments in advance		85	1,173	551	-	-	-
Prepayments		8,770	4,651	715	-	-	-
Current liabilities:							
Trade and other payables	21	(42,051)	(16,259)	(88,548)	(678)	(9)	(58)
Income received in advance		(58)	(623)	(340)	-	-	-
Credit balances in debtors		-	-	(37)	-	-	-
Net US Dollar exposure		**85,543**	**142,630**	**1,780**	**11,545**	**52,294**	**9,962**
Euro exposure:							
Current assets:							
Trade and other receivables	12	37,756	41,730	33,533	(406)	(456)	905
Cash and cash equivalents	13	1,382	842	350	-	108	74
Payment in advance		1	-	-	-	-	-
Prepayments		117	37	32	-	-	-
Current liabilities:							
Trade and other payables	21	(18,252)	(6,729)	(15,805)	(287)	(528)	(7,709)
Income received in advance		-	-	(73)	-	-	-
Credit balances in debtors		-	-	(5)	-	-	-
Net Euro exposure		**21,004**	**35,880**	**18,032**	**(693)**	**(876)**	**(6,730)**
Net exposure to foreign currency in Rand		**106,547**	**178,510**	**19,812**	**10,852**	**51,418**	**3,232**

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 2021, if the Rand/dollar exchange rate had been 10% (2019: 10% ; 2018: 10%) higher or lower during the period, with all other variables held constant, profit or loss for the year would have been R 46 248 (2019: R 22 128) higher.

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 sensitivity analysis

The interest rate sensitivity analysis indicates what the impact of a 2% positive and negative variance would have had on the financial statements and is based on the assumption that all other variables remain constant. The analysis is performed for financial instruments exposed to interest rate risk, as well as for D&D assets and liabilities. In prior periods, the account balances of financial instruments that are exposed to interest rate risk were exposed and the sensitivity analysis was changed in the current year, to estimate what the impact of a 2% change in the interest rate would be.

For financial instruments, a 2% increase in interest rates would have had a positive impact of R671 000 and a 2% decrease in interest rates would have had a negative impact of R671 000 on the profitability of Necsa.

For D&D related assets and liabilities, a 2% increase in interest rates would have had a negative impact of R27 000 and a 2% decrease in interest rates would have had a positive impact of R27 000, on the profitability of Necsa.

Notes to the Annual Financial Statements

45. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT (CONTINUED)

Group	2021	2021	2020	2020	2019	2019
Increase or decrease in rate	Increase	Decrease	Increase	Decrease	Increase	Decrease
Financial instruments:						
Impact of 2% increase or decrease in interest rate on interest income	871	(871)	1,059	(1,059)	1,710	(1,710)
Impact of 2% increase or decrease in interest rate on interest expense	(92)	92	(127)	127	(236)	236
	779	**(779)**	**932**	**(932)**	**1,474**	**(1,474)**
Other:						
Impact of 2% increase or decrease in interest rate on D%D related interest income	3,796	(3,796)	4,585	(4,585)	4,287	(4,287)
Impact of 2% increase or decrease in interest rate on D%D related interest expense	(3,823)	3,823	(4,592)	4,592	(2,841)	2,841
	(27)	**27**	**(7)**	**7**	**1,446**	**(1,446)**
Total impact on profit or loss and equity	**752**	**(752)**	**925**	**(925)**	**2,920**	**(2,920)**

45. Financial instruments and risk management (continued)

Company	2021	2021	2020	2020	2019	2019
Increase or decrease in rate	Increase	Decrease	Increase	Decrease	Increase	Decrease
Financial instruments:						
Impact of 2% increase or decrease in interest rate on interest income	718	(718)	783	(783)	796	(796)
Impact of 2% increase or decrease in interest rate on interest expense	(46)	46	(75)	75	(101)	101
	672	**(672)**	**708**	**(708)**	**695**	**(695)**
Other:						
Impact of 2% increase or decrease in interest rate on D%D related interest income	3,796	(3,796)	4,583	(4,583)	4,272	(4,272)
Impact of 2% increase or decrease in interest rate on D%D related interest expense	(3,823)	3,823	(4,592)	4,592	(2,817)	2,817
	(27)	**27**	**(9)**	**9**	**1,455**	**(1,455)**
Total impact on profit or loss and equity	**645**	**(645)**	**699**	**(699)**	**2,150**	**(2,150)**

46. COST OF SALES

Sale of goods	390,368	628,208	1,269,561	180,278	305,651	191,964
Rendering of services	2,361	2,519	2,506	-	-	-
Construction contracts	2,287	5,601	67,599	2,287	5,601	67,599
Manufactured goods:						
Raw materials consumed	-	583	2,316	-	583	2,316
Employee costs	169,346	148,720	136,825	-	-	-
Depreciation and impairment	14,051	13,795	17,418	-	-	-
Manufacturing expenses	(2,196)	795	6,922	-	-	-
	576,217	**800,221**	**1,503,147**	**182,565**	**311,835**	**261,879**

Notes

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