NATIONAL NUCLEAR REGULATOR

For the protection of persons, property and the environment against nuclear damage.

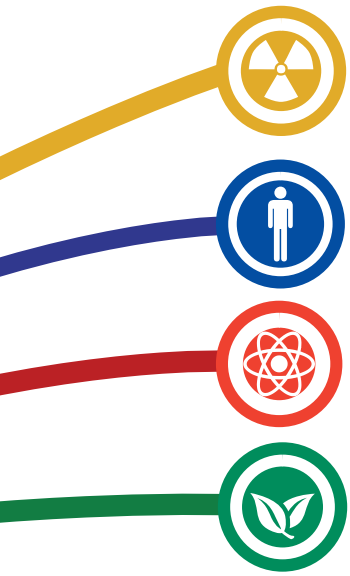
ANNUAL REPORT 2012

Assuring South African's of World-Class Nuclear Safety Standards and Regulatory Practices

PRESENTATION OF THE ANNUAL REPORT OF THE

NATIONAL NUCLEAR REGULATOR

This annual report is submitted to the Minister of Energy in accordance with Section 7(1j) of the National Nuclear Regulator Act (Act no. 47 of 1999). The report reflects the activities of the NNR in relation to the health and safety of workers, the public and the environment associated with all sites regulated by the NNR, and the financial aspects in accordance with Section 55 of the Public Finance Management Act (Act no. 1 of 1999).



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CORPORATE PROFILE

OVERVIEW OF THE NUCLEAR SECTOR ROLEPLAYERS IN SOUTH AFRICA

The Koeberg Nuclear Power Station (KNPS) is responsible for electricity generation. It is government-owned through the public entity, Eskom, which reports to the Minister of Public Enterprises.

The NNR oversees safety regulation of nuclear installations at Necsa's Pelindaba site, Vaalputs Radioactive Waste Disposal Facility, the Koeberg Nuclear Power Station, certain mines and other small users/operators.

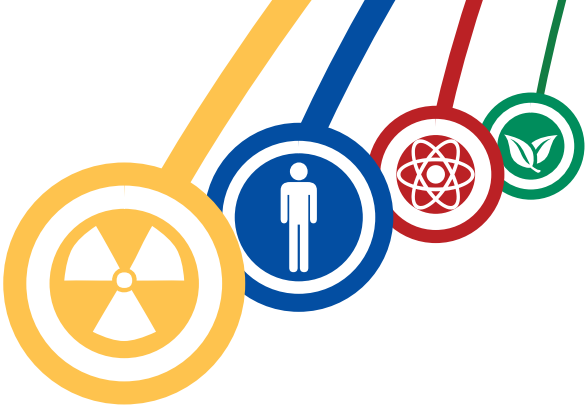
Necsa undertakes and promotes research and development in the fields of nuclear energy, radiation sciences and technology, medical-isotope manufacturing, nuclear liabilities management, waste management and decommissioning. Necsa's reactor-produced radioisotopes are exported to more than 50 countries.

The Department of Energy (DoE) plays a leading governance role in nuclear technology and safety. The Minister of Energy is the executive authority responsible for overseeing the Nuclear Energy Corporation of South Africa (Necsa) and the National Nuclear Regulator (NNR).

The Department of Health Directorate: Radiation Control issues licences for: Group III hazardous substances (electronic product generating X-rays, other ionising beams, electrons, neutrons or other particle radiation or non-ionising radiation); and Group IV hazardous substances (radioactive material outside a nuclear installation, which does not form part of, or is used or intended to be used, in the nuclear fuel cycle, and which is used or intended to be used for medical, scientific, agricultural, commercial or industrial purposes).

The Nuclear Fuels Corporation (NUFCOR) is responsible for Uraniumore refinement and export. It is privately owned by AngloGold.

iThemba Laboratories is responsible for medical isotopes and medical applications. This public entity falls under the Department of Science and Technology.



LEGISLATIVE AND REGULATORY FRAMEWORK

Governance of the Nuclear Sector in South Africa

The nuclear sector in South Africa is mainly governed by the Nuclear Energy Act, (Act no. 46 of 1999), the National Nuclear Regulator (NNR) Act, (Act no. 47 of 1999) and National Radioactive Waste Disposal Institute Act, (Act no. 53 of 2008).

Other legislation that also has some relevance for the nuclear industry includes: the Hazardous Substances Act; the Non-Proliferation of Weapons of Mass Destruction Act; the Patent Act; the National Strategic Intelligence Act; the National Key Points Act; the Protection of Constitutional Democracy Against Terrorist and Related Activities Act; the Mine Health and Safety Act; the Mineral and Petroleum Resources Development Act; the National Environmental Management Act; the National Water Act and the Dumping at Sea Control Act.

The NNR operates within the following national legislative and regulatory frameworks:

- The Constitution of the Republic of South Africa (Act no. 108 of 1996).
- Nuclear Energy Act (Act no. 46 of 1999).
- National Nuclear Regulator Act (Act no. 47 of 1999).
- Public Finance Management Act (Act no. 1 of 1999).
- National Treasury Regulations.
- National Radioactive Waste Management Bill – Notice no 654 of 2008.
- Promotion of Access to Information Act (Act no. 2 of 2000).
- Promotion of Administrative Justice Act (Act no. 3 of 2000).
- RSA Government Gazette 8755 – Safety Standards R388, 28 April 2010.
- The NNR enters into co-operative governance agreements to give effect to the principles of co-operative government and intergovernmental relations as contemplated in the regulations in terms of section 6(3) of the NNR Act (Act no. 47 of 1999) and in terms of section 239, Chapter 3 of the Constitution of the Republic of South Africa (Act no. 108 of 1996).

South Africa operates within the following international nuclear legislative frameworks:

- South Africa is a member state of the IAEA since 1957 and has the following multilateral agreements in force;
  - Agreement on the Privileges and Immunities of the IAEA.
  - Convention on the Physical Protection of Nuclear Material.
  - Convention on Early Notification of a Nuclear Accident.
  - Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.
  - Convention on Nuclear Safety.
  - Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.
  - Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the IAEA (RSA).
  - African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA) - Fourth Extension.

Safeguards agreement

- Agreement between the IAEA and the government of the Republic of South Africa for application of safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons, 1744.
- Protocol additional to the agreement between the government of the Republic of South Africa and the International Atomic Energy Agency for the application of safeguards in connection with Treaty on the Non-Proliferation of Nuclear Weapons.

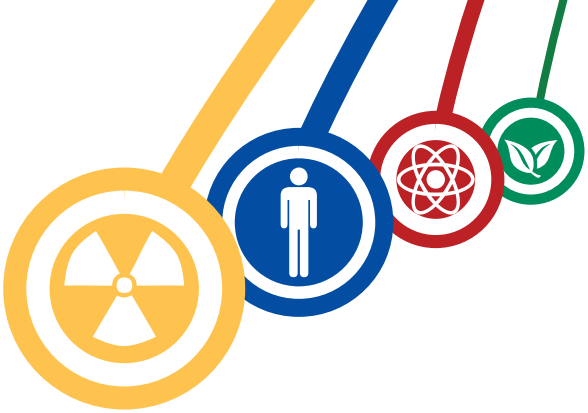
LEGALLY BINDING NUCLEAR SAFETY CONVENTIONS

The International Atomic Energy Agency (IAEA) facilitates the establishment of international conventions on nuclear safety. These are legally binding international instruments which are required to be ratified by Contracting Party or member State before they can be implemented. The conventions place certain obligations on member states to implement measures aimed at ensuring nuclear safety.

South Africa ratified the Convention on Nuclear Safety (CNS) in 1996 and its obligations under the CNS commenced on 24 March 1997. In November 2006, South Africa acceded to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and its obligations under the joint convention commenced in February 2007.

As a member state of the International Atomic Energy Agency, South Africa is required to fulfil its respective international obligations and promote international cooperation to enhance global nuclear safety. In terms of section 5(e) of the NNR Act, the NNR is mandated to fulfil national obligations with respect to international instruments concerning nuclear safety and to act as the national competent authority in connection with the International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Material.

The NNR co-ordinates and implements South Africa's Contracting Party (CP) obligations to the IAEA Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.



NATIONAL NUCLEAR REGULATOR (NNR)

The National Nuclear Regulator (NNR) is a public entity which is established and governed in terms of Section 3 of the National Nuclear Regulator Act, (Act no. 47 of 1999), to provide for the protection of persons, property and the environment against nuclear damage, through the establishment and enforcement of safety standards and regulatory practices.

As the national competent authority for nuclear safety in South Africa, its primary responsibility is to provide assurance that individuals, society and the environment are adequately protected against radiological risks associated with the use of nuclear technology in South Africa.

To achieve this, the NNR monitors and enforces compliance to regulatory requirements over a diverse range of facilities and actions for the achievement of safe operating conditions; prevention of nuclear accidents; and mitigation of nuclear accident consequences. The facilities and actions currently under the regulatory control of the NNR include the safety of the Koeberg Nuclear Power Station, the Pelindaba Research and Production Facilities, the Vaalputs Nuclear Waste Repository and the mining and processing of Uranium and other Radioactive ores.

VISION

To be an independent world-class regulatory authority on nuclear safety.

MISSION

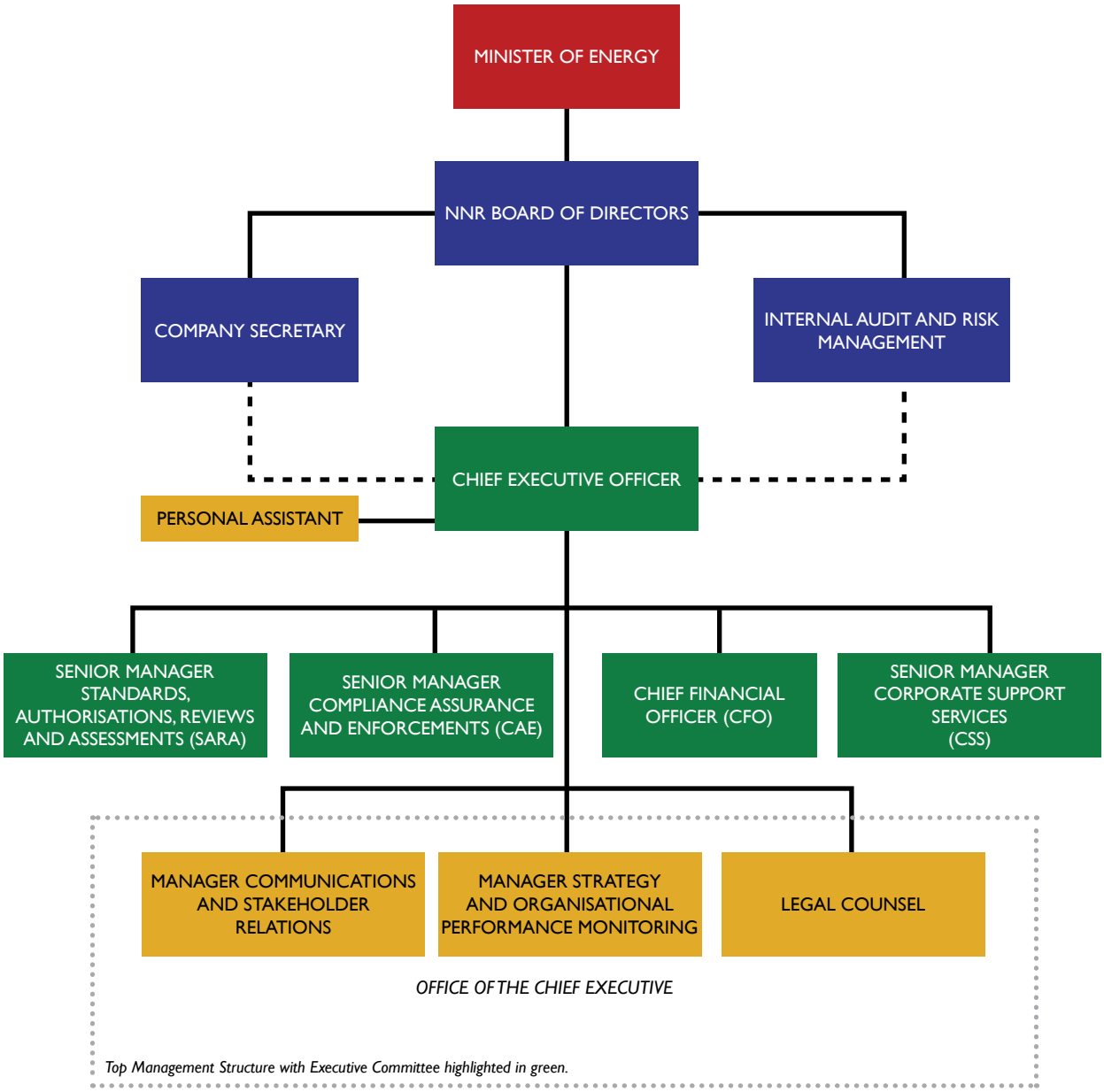
To provide and maintain an effective and efficient national regulatory framework for the protection of persons, property and the environment against nuclear damage.

VALUES

The Corporate Values of the NNR are:

- Professionalism
- Integrity
- Excellence
- Valuing our People
- Teamwork
- Openness and Transparency

STRUCTURE OF THE NNR



Top Management Structure with Executive Committee highlighted in green.

EXECUTIVE MANAGEMENT

Adv Boyce Mkhize
Chief Executive Officer

Mr Orion Phillips
Senior Manager: Standards, Authorisations, Reviews and Assessments (SARA)

Mr Thabo Tselane
Senior Manager: Compliance Assurance & Enforcements (CAE)

Ms Zodwa Mbatha
Corporate Support Services (CSS)

Mr Dakalo Netshivhazwaulu
Chief Financial Officer
(appointed in June 2012)

SENIOR MANAGEMENT

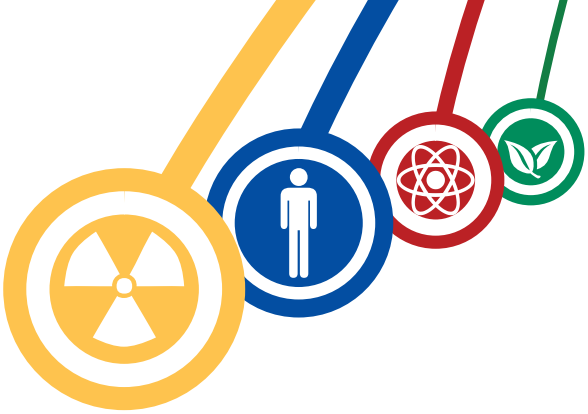
Ms Bridget Laka
Company Secretary

Ms Phindile Masilo
Manager Internal Audit and Risk Management

Mr Gino Moonsamy
Manager Communications and Stakeholder Relations

Ms Ntsikie Kote
Manager Strategy and Organisational Performance Monitoring

Ms Mphengoa Phooko
Legal Counsel



1. SUBMISSION OF THE ANNUAL REPORT TO THE EXECUTIVE AUTHORITY

Directors' Responsibility and Approval

The Directors are required to develop and implement a strategy that will meet the objects set out in the National Nuclear Regulator Act, Act no. 47 of 1999 (NNR Act). As the accounting authority, the Board is responsible for instituting and maintaining measures that will provide assurance to the stakeholders of a robust regulatory system designed to protect the public, environment and persons from nuclear damage.

Accordingly, Directors have a responsibility to ensure that measures are in place to facilitate and enhance organisational performance, in terms of the organisational strategic goals and outputs, while also ensuring sound financial performance. The NNR uses a balanced scorecard to manage and track organisational performance - this is articulated later in this report in a section reflecting on the performance ratings achieved during the period under review. The NNR achieved 75,3% of its performance targets during the period under review. This is a marked improvement from the previous year. A further narrative is provided in the body of the report to contextualise this level of performance. The Board and the executive continue to monitor and review NNR processes and systems in order to enhance the level of performance.

The Directors are required 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 entity, as at the end of the period under review, and the results of its operations and cash flows for the period then ended, in conformity with Generally Recognised Accounting Practice (GRAP).

The annual financial statements are prepared in accordance with GRAP and are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The Directors are of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied upon 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 are pleased to submit this annual report containing both the organisational and financial performance of the NNR for the 2011/2012 financial year.

The annual financial statements set out on pages 92 to 115, which have been prepared on the going concern basis, were approved by the Board of Directors on 26 July 2012 and are signed on its behalf by:

Dr T Cohen
Chairperson

Adv BM Mkhize
Chief Executive Officer

2. CORPORATE GOVERNANCE REPORT

2.1 Introduction

The NNR is committed to good corporate governance and observing ethical standards in discharging its mandate. Corporate governance embodies processes and systems by which organisations are directed, controlled and held accountable. It is also concerned with the organisational arrangements that are in place to ensure an appropriate set of checks and balances.

An important aspect of good corporate governance is to follow best practice. The Board has thus adopted the prescripts of King III and Protocol of Corporate Governance in the Public Sector as well as International Financial Reporting Standards for financial reporting and accounting purposes. These protocols and prescripts have been engrained in the NNR policies and practices to ensure a consistently high level of accountability and good corporate governance.

NATIONAL NUCLEAR REGULATOR

BOARD OF

Dr T Cohen
Chairperson

Mr T Mofokeng
Deputy Chairperson
Audit and Risk Management Committee

Adv BM Mkhize
CEO
(Executive Director)

Dr T Motshudi
Technical Committee

Mr D Elbrecht
Transformation and Development Committee, Technical Committee

Ms M Liefferink
Transformation and Development Committee, Technical Committee

DIRECTORS

Mr N Lesufi
Transformation and Development Committee,
Audit and Risk Management Committee

Mr J Leaver
Technical Committee,
Audit and Risk Management Committee

Mr D Netshivhazwaulu
Audit and Risk Management Committee

Ms D Kgomo
Technical Committee,
Transformation and Development Committee

Ms N Cobbinah
Alternate member: DEA

Mr I Abader (Board Member)

Mr K Maphoto (Alternate member: DoE)

2.2 Board of Directors

The Board of Directors, appointed by the Minister of Energy (the executive authority) in terms of the NNR Act, derives its power from Section 8 of the NNR Act. It acts as the NNR's Accounting Authority in terms of the Public Finance Management Act (PFMA).

Control and management of the affairs of the Regulator

In terms of Section 8 (1) and (2) the Regulator is governed and controlled, in accordance with the NNR Act, 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 the Regulator's functions.

The role of the Board is to ensure that the NNR effectively carries out its mandate as set out in the NNR Act and PFMA, by collectively directing the affairs of the NNR, while meeting the interest of the stakeholders, including the executive authority. The Board fully appreciates the demand for accountability, honesty and transparency in fulfilling its fiduciary duties towards the executive authority and the organisation. To this end, the Board is striving to ensure that the NNR complies with the obligations imposed by various laws and regulations that are applicable to the NNR and the Protocol on Corporate Governance, which includes the King III report.

The Board is mindful of the integrated reporting, which is a new approach to corporate reporting, that demonstrates the linkage between an organisation's strategy, governance and financial performance and the social, environmental and economic context within which it operates.

During the period under review, the Board consisted of 12 non-executive Directors who were independently appointed by the Minister of Energy in terms of the NNR Act, and one Executive Director (Chief Executive Officer). Board members, including the CEO, hold office for a term of three years, but are eligible for re-appointment.

During the period under review, the following changes occurred within the Board:

2.3 Board Charter

The Board adopted a Board Charter, which expands on the responsibilities of the Board set out in the relevant Acts. It also defines the responsibilities of the Board as a unitary working group, covering areas that are not explicitly dealt with in the Acts. The Board Charter is reviewed annually to ensure that it meets standards of best practice, within the Regulator's unique environment, as far as is reasonably possible. In addition, the Charter was reviewed in order to cater for the requirements of King III which provides that the Board must always act in the best interests of the organisation.

2.4 Code of Practice and Conduct

The Board adopted a code of conduct and good ethics, which requires Board members and employees to conduct themselves with integrity, openness and accountability when dealing with all stakeholders. The purpose of the code is to prevent unethical behaviour and promote and encourage ethical behaviour. In terms of the code, declaration of interest has to be made by both Board members and staff of the NNR. The declaration of interest register is updated annually and seeks to avoid real, perceived or potential conflicts of interest.

2.5 Board Meetings

The Board meets regularly and retains full and effective control over the organisation. The Board met five times during the period under review to discuss and review the NNR's operational performance and to address issues of strategic importance. It monitored management's implementation of organisational plans and strategies. Special Board meetings were convened when necessary to consider issues that required Board resolutions between scheduled meetings. The CEO is an executive member of the Board. Members of management were periodically invited to attend Board meetings.

The Board held four ordinary and one special meeting.

Board members were exposed to the following training and development programmes:

- Nuclear Energy Conference hosted by IIR Management;
- Board Workshop on NNR Nuclear Related Issues (URP 2010) Position Paper Presentation;
- Workshop on Corporate Governance Risk Management by Milpark Business School;
- Public Sector Forum by the Institute of Internal Auditors SA;
- Director's Programme by the Institute of Directors;
- Energy Planning Colloquium presented by the Department of Energy.

2.6 Committees of the Board

The Board was advised and assisted by three Board Committees, i.e., the Audit and Risk Management Committee, Technical Committee and the Transformation and Development Committee. Board Committees assist the Board to discharge its responsibilities in specific areas of duties and responsibilities, such as governance, audit, risk management, human resources and finance. 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. TOR of Board Committees are reviewed annually to ensure continuing relevance.

2.6.1 Transformation and Development Committee

The Transformation and Development Committee is responsible for determining human resources strategies and policies and recommends these to the Board for approval. These include: human resources development and conditions of service; employment equity reports; performance management systems, and any other organisational development initiatives. The Transformation and Development Committee comprised the following members:

- Mr N Lesufi (Chairperson);
- Ms D Kgomo;
- Ms M Liefferink; and
- Mr D Elbrecht.

Board Meeting Attendance Register: April 2011 - March 2012

Names	Date of the meeting				
	19 Apr 2011	25 May 2011	28 Jul 2011	28 Oct 2011	30 Jan 2012
Dr T Cohen – Chairperson	×	✓	✓	✓	✓
Mr T Mofokeng – Deputy Chairperson	✓	✓	✓	✓	✓
Mr J Leaver	✓	✓	×	✓	✓
DrT Motshudi	✓	✓	✓	✓	✓
Mr D Elbrecht	✓	✓	✓	✓	✓
Ms M Liefferink	✓	✓	✓	✓	✓
Mr N Lesufi	✓	✓	✓	✓	✓
Adv BM Mkhize - Chief Executive	✓	✓	✓	✓	✓
Mr I Abader	n/a	n/a	×	×	✓
Mr D Netshivhazwaulu	✓	✓	✓	✓	✓
Ms D Kgomo	✓	✓	✓	✓	✓
Mr N Cobbinah	n/a	n/a	✓	×	✓
Mr K Maphoto	n/a	n/a	✓	✓	×

✓ *Member present at the meeting*
× *Member not present, but tendered apology*
n/a *Not applicable, refers to member not yet appointed to the Board/Board Committee or member resigned from the Board/Board Committee*

The Transformation and Development Committee convened three times during the period under review. Attendance at meetings was as follows:

Names	Date of the meeting		
	14 Jul 2011	20 Oct 2011	19 Jan 2012
Mr N Lesufi - Chairperson	✓	✓	✓
Ms M Liefferink	✓	✓	✓
Ms D Kgomo	✓	✓	✓
Mr D Elbrecht	✓	✓	×

✓ *Member present at the meeting*

× *Member not present, but tendered apology*

2.6.2 Audit and Risk Management Committee

The Audit and Risk Management Committee comprised four non-executive Directors and one independent member. A non-executive Director who is not the chairperson of the Board chaired the Committee. The Audit Committee assisted the Board in overseeing:

- The quality and integrity of the financial statements and the disclosure thereof;
- The scope and effectiveness of the internal audit function, and
- The effectiveness of the organisation's system of internal control.

The current members of the Audit and Risk Management Committee are:

- Mr T Mofokeng (Chairperson)
- Mr N Lesufi
- Mr J Leaver
- Mr D Netshivhazwaulu
- Ms E Thema*

** Ms E Thema, Independent Audit Committee member.*

The Audit and Risk Management Committee convened seven times during the period under review.

Attendance at meetings is indicated in the table below.

2.6.3 Technical Committee

The Technical Committee was established in 2011. It consists of three non-executive Directors and two external members who are experts in the technical/legal or environmental field. The role of the Committee is to, *inter alia*:

- Review the policies and practices on the authorisation of nuclear facilities, licensing processes and compliance assurance and enforcement procedures; and
- Advise the Board on all technical related matters pertaining to the discharge of the Regulator's mandate.

Names	Date of the meeting						
	5 Apr 2011	19 May 2011	19 Jul 2011	28 Jul 2011	29 Jul 2011	21 Oct 2011	18 Jan 2012
Mr T Mofokeng - Chairperson	✓	✓	✓	✓	✓	✓	✓
Mr N Lesufi	✓	×	✓	✓	✓	✓	×
Mr J Leaver	✓	✓	×	×	×	✓	✓
Ms E Thema	✓	✓	×	✓	✓	✓	✓
Mr D Netshivhazwaulu	✓	✓	✓	✓	×	✓	✓

✓ *Member present at the meeting*

× *Member not present, but tendered apology*

The current members of the Committee are:

- Ms D Kgomo (Chairperson);
- Dr T Motshudi;
- Mr J Leaver;
- M Liefferink; and
- D Elbrecht.

The Committee met three times since its establishment and constitution in April 2011.

Attendance at meetings was as follows:

Names	Date of the meeting		
	21 Jul 2011	20 Oct 2011	19 Jan 2012
Ms D Kgomo - Chairperson	✓	✓	✓
Dr T Motshudi	✓	✓	✓
Mr J Leaver	×	✓	✓
Ms M Liefferink *	n/a	✓	✓
Mr D Elbrecht *	n/a	✓	×

* *Directors who were requested by the Board to attend Technical Committee meetings in order to provide expertise while the process of appointing external members was being finalised.*

✓ *Member present at the meeting*

× *Member not present, but tendered apology*

n/a *Not applicable, refers to member not yet appointed to the Board/Board Committee or member resigned from the Board/Board Committee*

2.7 Board Remuneration

The remuneration of Board members is determined by the Minister of Energy with the concurrence of the Minister of Finance and is reviewed annually. Board members are remunerated for attending Board or Committee meetings. The details of the remuneration for the year ended 31 March 2012 are stated in Note 13 to the annual financial statements on page 109.

2.8 Independence of the Board

The independence of the Board is achieved and maintained through a number of measures, including:

- Board members only being remunerated for attending meetings;
- Separation of position of the chief executive office and chairperson;
- All Board Committees being chaired by non-executive Directors; and
- The Board having access to independent external advice at the cost of the organisation.

2.9 Financial Planning and Management

During the period under review, all financial reporting processes were carried out in accordance with the requirements of the PFMA, the NNR Act, Treasury Regulations and GRAP.

The strategic plan and the business plan, with accompanying budgets, were prepared, approved by the NNR Board and submitted to the Minister of Energy for approval, as required in terms of the PFMA.

The final step in the NNR's strategic and business planning process is the updating of levies for regulated entities.

2.10 Internal Audit

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organisation's operations. It helps the NNR accomplish its objectives by bringing a systematic and disciplined approach to evaluate and improve the effectiveness of risk management, internal controls, and governance processes. The internal audit assists the Board in determining whether the NNR's network of risk management, control and governance processes, as designed and represented by management, is adequate and functioning in a manner to ensure, *inter alia*, that:

- Risks are appropriately identified and managed;
- Significant financial, managerial and operating information is accurate, reliable and available on time;

- Resources are acquired economically, used efficiently and are adequately protected; and
- Programmes, plans and objectives are achieved.

Opportunities to improve management control, service delivery and the NNR's image, as identified during audits, are communicated to the appropriate level of management.

2.11 Risk Management

The Board is responsible for governing risk management processes in accordance with corporate governance requirements. During the period under review, an annual risk assessment was conducted, with the following objectives:

- Providing the Board with the assurance that significant business risks are systematically identified, assessed and reduced to acceptable levels, to achieve an optimal risk/reward balance.
- Making risk identification and risk management an integral part of the daily activities of every person in the organisation.

The NNR's enterprise-wide risk management process is guided by the following key principles:

- A clear assignment of responsibilities, as well as accountability.
- The existence of a common enterprise-wide risk management framework and process.
- The identification of uncertain future events that may influence the success of business plans and strategic objectives.
- The integration of risk management activities within the organisation, as well as across its value chains.

The NNR's integrated risk management implementation approach, *inter alia*, entails the development of strategic, functional and process risk profiles. Strategic risk is typically defined as risks that may influence the achievement of strategic business objectives. Similarly, functional and process risks are defined as risks that may influence the achievement of functional and process objectives respectively. Therefore, all risks with a rating of medium and high are monitored quarterly and feedback provided to management and the Board to ensure the approved risk profile is maintained.

2.12 IT Governance

The Board is ultimately responsible for information technology (IT) governance. Responsibility for the implementation and monitoring of the IT governance framework has been delegated to management, who ensures adequate management of IT governance.

Business continuity plan

The implementation of the approved business continuity plan (BCP) began during the period under review. This plan offers: on- and off-site recovery capabilities for NNR information; preparation for and management of, among others, natural disasters, power outages, hardware/telecommunications failures, data corruption, explosives and chemical, biological and any other hazards. It also provides guidance for the resumption and recovery of time-sensitive business operations in accordance with pre-established timeframes. The plan is being implemented in phases and the NNR is satisfied that reasonable measures to ensure business continuity in case of a disaster are in place.

Providing for the protection of persons, property and the environment against nuclear damage through the establishment and enforcement of safety standards and regulatory practices.

3. REPORT OF THE CHAIRPERSON

Dr T Cohen

The primary role of the National Nuclear Regulator (NNR) is to provide for the protection of persons, property and the environment against nuclear damage through the establishment of safety standards and regulatory frameworks suitable for South Africa.

I am pleased to report that the nuclear installations and entities under the regulatory oversight of the NNR did not expose workers to harmful levels of radiation or caused nuclear damage to the environment in 2012. Regulatory control was satisfactorily maintained over all other activities involving hazardous nuclear material. The Board and its Committees were successful in fulfilling their fiduciary duties during the period under review and continued to discharge their mandate in accordance with the set charters and King III Code of Good Governance.

"Assuring South Africans of World-class Nuclear Safety Standards and Regulatory Practices"

Feedback on SA Stress Tests post Fukushima Nuclear Accident

Following the accident at the Fukushima Daiichi Nuclear Power Plant in Japan in March 2011, the role of national regulatory authorities globally, received increased attention. The accident triggered a global effort to re-examine nuclear safety. Regulatory authorities from 23 countries, including South Africa, along with four regional and three international organisations, as well as the International Atomic Energy Agency (IAEA) among many other organisations, contributed information on national response activities, stress test re-

ports, and complimentary activities and assessments to the stress tests.

The NNR directed the operators of nuclear installations in South Africa, namely Eskom and the South African Nuclear Energy Corporation (Necsa) to perform safety assessments on the Koeberg and SAFARI-1 nuclear installations in light of the Fukushima Daiichi accident.

The safety assessments were completed during the period under review and the NNR is of the opinion that regulatory standards and practices in these nuclear installations are in line with internationally accepted standards and practices. The assessments of the Koeberg and SAFARI-1 installations led to the conclusion that although no essential changes affecting safety were required, the NNR however identified areas for further strengthening the regulatory regime which will be addressed as part of the future review of the Regulatory Standards and Practices.

The NNR also provided regulatory support to the Department of Energy for surveying cargo and material arriving from Japan for possible radiological contamination. There were no incidents of radiological contamination reported.

In March 2012, international experts discussed reactor and spent fuel safety in the light of the Fukushima Daiichi accident. This meeting noted good practices globally and South Africa was counted among the countries with good practices around the safe management of spent fuel and radioactive waste.

International Nuclear Safety Conventions

South Africa is a signatory (Contracting Party) to the IAEA Convention on Nuclear Safety; and the IAEA Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

The NNR participated at the fifth Review Meeting of the Contracting Parties to the Convention on Nuclear Safety (CNS) held at the Headquarters of IAEA in Vienna, Austria from 4 to 14 April 2011. The fifth Review Meeting was the first major international nuclear safety meeting following the events of the Fukushima Daiichi Nuclear Power Plant. It was noted that South Africa's Report to the CNS complied with the provisions of the Convention as required by Contracting Parties in the National Reports.

The National Report to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was prepared by the NNR with participation from South African industry roleplayers. The NNR coordinated and submitted the report on behalf of South Africa to the Joint Convention Secretariat in October 2011.

Nuclear Security during UNFCCC COP-17 (Climate Conference)

The NNR played a leading role in supporting the DoE in the development of the Nuclear Security Crisis Management Contingency Plan for the 2011 UNFCCC COP-17 (Climate Change Conference). Other leading agencies including the Department of Justice, South African Police Services (SAPS), Water Affairs, Environmental Affairs, the Department of Health and the Department of Agriculture also participated in this project. As a result of a robust integrated approach to nuclear security crisis management, there were no incidents involving malicious use of radioactive material, detected during the conference.

Nuclear Expansion in South Africa

With the country's growing energy requirements regularly under increasing scrutiny and the increasing concern for carbon emissions from the global community, nuclear power has been presented as a viable consideration for the South African government, as part of the energy generation mix. This presents the NNR with the challenge of ensuring that any new nuclear power station commissioned, is in the first instance safe for the workers, and that the communities which live nearby are not only adequately protected, but are also constantly updated and informed of safety aspects pertinent to their environment.

Continuously improving and reinforcing a safety culture by marrying 'know-how', best practices and lessons learned from the past, is regarded as a top priority for the NNR.

As part of the continual improvement of safety and preparation for potential new projects, the NNR participated in the South African Government's Integrated Nuclear Infrastructure Review (INIR) process. This process will culminate in the production of a National Report that will be presented to the Executive Ministerial Committee responsible for the nuclear new-build expansion programme for South Africa.

National Co-operation – Harmonising Regulatory Activities

The NNR remains committed to providing effective regulation of the safe use and handling of nuclear and radioactive materials by the South African industry and to promoting the adoption of a harmonised framework across all jurisdictions. At national level, the NNR continues to support the principles of good co-operative governance aimed at optimising the effectiveness of the regulatory regime in South Africa. In line with the provisions of Section 6 of the NNR Act, the NNR continued to implement the co-operative governance agreements with relevant organs of state during the period under review.

Management and Good Corporate Governance

During the period under review, the NNR Board sanctioned an undertaking to conduct a Board compliance checklist in line with the NNR Act. The results of this exercise revealed 90% compliance to the NNR Act. More effort will be put in the next financial year to ensure 100% compliance with the Act. In line with the principles of good governance, Board members attended training workshops to improve their understanding of their fiduciary duties.

The Board is of the opinion that the effectiveness and overall strength of the governance and controls framework within the NNR is adequate.

Financial Sustainability

During the period under review, the NNR continued to manage the allocated financial resources conservatively. Total operating revenue for the year was R125,6 million, R88,7 million of which was derived from services rendered to holders of nuclear licences (Koeberg Nuclear Power Station and Necsa), and holders of certificates of registration (mines and small users of radioactive materials and processing), and R35,4 million from a direct government grant.

Conclusion

It is with a sense of modest pride to report that South Africa has over the years displayed an excellent nuclear safety track record and key players and stakeholders are aware of the regulatory requirements and largely comply with the said requirements. All of us in this sector are acutely aware of the potential damage that a nuclear event can cause to people and the environment and I believe that we are all pulling together so that no nuclear accident within our area of control will arise and I am proud of that collaboration.

The period under review has been very dynamic, exciting and most fulfilling for me and the Board. I acknowledge that all the achievements were only made possible through the dedicated contribution of members of the Board and the hard-working employees of NNR – Thank you!

I would also like to take this opportunity to thank the Honourable Minister of Energy for her support and guidance over the reporting period.

Dr T Cohen
Chairperson: Board of Directors

4. REPORT OF THE CHIEF EXECUTIVE OFFICER

Adv Boyce Mkhize

I am pleased to report that there were no nuclear incidents in South Africa that could have compromised human safety and the environment during the period under review. All authorised facilities and activities continued to operate safely and in compliance with the NNR's regulatory requirements. The NNR has continued to contribute towards maintaining the high standard of radiation protection and nuclear safety that exists in South Africa.

The following represents my review which summarises notable key highlights forthe 2011/2012 financial year.

Summary of Key Highlights

- One of the major issues during the reporting period was to review the measures in the Balanced Scorecard. The NNR Balanced Scorecard was amended and improved to include clear and precise measures for the organisation.This area can still improve with the NNR making its objectives to fit the SMART principle.

- Notably during this reporting period, the NNR focused on the review of the reassessment reports provided by Necsa and Koeberg on their safety considerations following the Fukushima nuclear accident in Japan. The NNR is satisfied that the holders have robust systems in place to provide acceptable assurance of nuclear safety

in case of an accident such as the one that occurred in Fukushima. A few recommendations for improvements have been noted and will be implemented by the holders under the oversight of the NNR.

- In December 2008 the South African Cabinet approved that the SAFARI-1 spent nuclear fuel originating from the United States of America (USA), be re-patriated. To this end, Necsa and the South African Department of Energy engaged with the USA Department of Energy to arrange for said repatriation. The re-patriation of the spent fuel entailed transport of the spent fuel, by sea, from the South African port of Richards Bay to the port of Charleston in the USA. This action required a nuclear vessel licence to be issued by the NNR. Necsa applied for a nuclear vessel licence for the intended transport actions in April 2011. Following a review of the safety documentation, the NNR issued Nuclear Vessel Licence No. NVL-10 for the proposed actions on 14 July 2011 which led to the safe repatriation of US origin spent fuel.

- Regulation on siting of new nuclear installations was promulgated during the reporting period. This will regulate site identification processes in order to ensure safety of the public and the environment.

- The preparation for the implementation of the IAEA Self-Assessment Tool (SAT) recommendations in order to position the NNR as a more effective Regulator was satisfactorily progressed during the reporting period. One hunderd percent of SAT actions were implemented thus positioning the NNR to become a more effective regulator.

- Progress was made in efforts to build stakeholder confidence in South Africa's nuclear safety regime by conducting a regulatory emergency exercise to test the effectiveness of Necsa's emergency preparedness and response arrangements for the Pelindaba site. The results of this exercise reflect that Necsa has adequate emergency preparedness measures in place in case of a nuclear accident. A few corrective measures were proposed to further strengthen the measures.

- The IAEA OSART mission (Operational Safety Review Team) on Koeberg took place over the period 23 August to 8 September 2011. The scope included safety culture management, organisation and administration, operations, maintenance, technical support (engineering), operating experience, radiation protection, chemistry and severe accident management. The conclusion of this mission was that Koeberg was largely operated within the acceptable international parameters of nuclear safety.

Nuclear Safety Index

The NNR is charged with the very important responsibility of exercising oversight on safety performance and to ensure that requisite regulations and standards are in place and these are effectively adhered to by all holders and enforced by the NNR to ensure sustained improvement of a safety performance culture.

- During the period under review the NNR focused on developing and strengthening the regulatory framework to enable the Regulator to exercise its oversight role with clearly defined legislative prescripts.

- During the period under review the NNR undertook a schedule of inspections of the regulated entities and actions of its authorisation holders as part of its programme for promoting and monitoring compliance with the NNR Act. Arising from these inspections, it was determined that a few breaches had occurred. They were reported in the quarterly reports and this annual report as required by the NNR Act. In all cases, corrective actions were taken by the authorisation holders and no enforcement actions were required.

- Over the past year, the NNR has learnt a few invaluable lessons which have served to inform our approach to safety regulation of natural sources, in particular contaminated ownerless legacy sites.

Challenges

The NNR has faced a few challenges during the period under review, including:

- Various aspects of the regulation of Special Case Mines (SCM) have been the focus for considerable discussion within the NNR. It is expected that the NNR will be able to finalise its deliberation and provide advice on relevant priorities for action in the next financial year.
- The regulation of ownerless contaminated legacy sites and its effects on the public and the environment continue to pose certain regulatory challenges.
- Reduction in the government grant and the NNR's operating revenue.

International Co-operation

During the reporting period, the NNR continued to participate actively in international nuclear safety co-operation. In particular, the NNR participated in the nuclear safety committees of the International Atomic Energy Agency and regulatory forums.

Organisational Restructuring

On 1 July 2011 the NNR began to operate under a new structure. This occurred after several months of intensive work involving both internal and external consultation. The organisational restructuring process entailed a comprehensive review of the NNR structure and processes, with the aim of streamlining the organisation to improve efficiency and operations.

It is expected that the beneficial outcomes of the reform will be realised over a period of two years as further reform actions are implemented. A post-implementation review will be carried out towards the end of the financial year 2012/2013.

Appreciation

As I reflect on the challenging year of work undertaken at the NNR, I am particularly proud of the way in which all staff have continued to uphold the most fundamental principles of our organisation – namely, to protect the health and safety of South Africans and the environment and to implement South Africa's international obligations to respect the peaceful use of nuclear energy. Through focused action and sterling commitment, the NNR will continue to ensure that nuclear safety is further strengthened.

I would like express my appreciation towards NNR staff, affectionately known as 'Team Orange' for their tireless commitment throughout the year. We safely managed to execute our mandate without compromising on our stakeholder expectations! I wish to sincerely thank the Minister of Energy, the Board Chairperson and the Board of Directors of the NNR for their guidance and unwavering support over the past year.

Adv Boyce Mkhize
Chief Executive Officer

5. ORGANISATIONAL PERFORMANCE

The NNR achieved 75,3% of its planned strategic initiatives during 2011/2012. The NNR Performance Information during the period under review, is summarised in the table below.

Table 1: Summary of Performance for 2011/2012

Status	Weighting for the year	Maximum possible score for 2011/2012	Actual score for 2011/2012
Customers and stakeholders	55%	55%	69%
Financial	5%	5%	99%
Internal business processes	25%	25%	69.7%
Learning and growth	15%	15%	63.6%
TOTAL	**100%**		
TOTAL ACHIEVED FOR 2011/2012			**75.3%**

5.1 Performance Monitoring

The NNR uses a balanced scorecard methodology to monitor the implementation of its strategy. Four strategic goals have been identified in the following focus areas:

- Service to customers and stakeholders;
- Financial management;
- Internal business processes; and
- Learning and growth.

The NNR's balanced scorecard reflects the organisation's strategic goals, initiatives, and measures of success and targets. Explanatory notes are provided on the progress of each strategic initiative.

Table 2: Legend explaining scorecard headings

Strategic Goals	Broad, long-term aims that define accomplishment of the strategic objective (as defined in the strategic plan 2011 to 2014).
Initiatives	Specific activities to be undertaken in order to achieve the goal (as defined in the strategic plan 2011 to 2014).
Measures	Indicators for measuring the success in achieving the goal (as defined in the strategic plan 2011 to 2014).
Targets	Targets that measure the accomplishment of a goal (as defined in the strategic plan 2011 to 2014).

Table 3: Legend explaining the status column in the scorecards

Achieved	Planned tasks have been completed and approved.
Largely achieved	Planned tasks achieved above 80%.
Not achieved	The planned tasks were not achieved.
Not applicable	Tasks were not due in the reporting period under review.

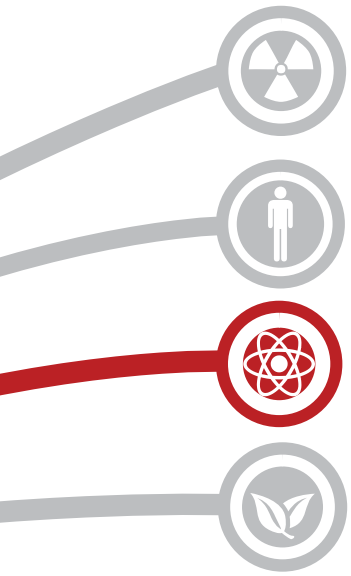
5.2 Performance Information 2011/2012

Strategic Programmes	Objective	Measures	Targets 2011/2012	Actual Performance Achieved In 2011/2012	Explanatory Notes
Provide assurance of safety performance of holders through inspections, audits, investigations and taking of enforcement action for identified non-compliances.	To provide assurance of nuclear safety and security, through effective and timely issuing of authorisations.	Level of responsiveness on various classifications (TAT).	Certificates of Registration (COR): 90 days.	NORM: 18	This measure is with regard to the time lines for issuing various types of authorisations under the NNR jurisdiction.
			Certificates of Exemption (COE): 120 days.	NTWP: 1 COE	
			Nuclear Vessel Licensing (NVL): 120 days.	KP: 3 NVLs NTWP: 1 NVLs	
			(Nuclear Installation Licences (NIL): <20% deviation on plan.	NTWP: 4 NILs All achieved at 100%)	
	To provide assurance of safety performance of holders through inspections, audits, investigations and taking of enforcement action for identified non-compliance.	Quality compliance assurance audits conducted.	341[1] in total for the year. Koeberg Programme: 51.	53/51(103%)	Inspections Conducted at Koeberg Nuclear Power Station.
			NTWP: 76	80/76 (105%)	Inspections Conducted at Necsa facilities.
			NORM: 214	200/214 (93%)	Inspections conducted at facilities with naturally occurring radioactive materials (NORM) including special case mines.
		% improvement on compliance index.	5% per quarter.	0%	This measure is due for reporting in 2014/2015.
		Effectiveness of enforcement actions taken.	No repeat offences within 12 months of issuing directive.	Targets achieved as there have been no repeat offences during the reporting period (100%).	Targets achieved as no repeat offences have been reported during the period under review.

Strategic Programmes	Objective	Measures	Targets 2011/2012	Actual Performance Achieved In 2011/2012	Explanatory Notes
Develop and implement regulatory programme for regulation of NPPs, fuel cycle, research reactors, NORM facilities and other actions.	To provide independent regulatory judgment and to ensure that the safety standards and practices are comprehensive, benchmarked with international standards and practices.	Percentage completion of SAT programme of action.	42% completion rate.	42% completion - 100% action plan achievement.	Deliverables due included the definition of the hierarchy of NNR standards, identification of new build priority items, definition of the regulatory standards matrix, performance of a gap analysis on the regulatory standards and an action plan to develop regulatory standards. All the activities were achieved.
		Turn Around Time (TAT) NNR Responsiveness (issuing of report).	30 days	0%	This measure was deemed as too operational and low level. The NNR was more concerned with measuring impact. It was therefore not monitored.
Regulatory emergency preparedness, response and security.	To assure that holders have an effective emergency preparedness plan.	Turn Around Time (TAT) NNR Responsiveness (issuing of report).	30 days	0%	This measure was deemed as too operational and low level. The NNR was more concerned with measuring impact. It was therefore not monitored.
Regulatory emergency preparedness, response and security.	To assure that holders have an effective emergency preparedness plan.	Percentage of corrective actions validated.	100% of the planned corrective actions validated.	90% of plan has been achieved.	Targets were largely achieved. The NNR observed an internal emergency exercise at Koeberg nuclear power plant in the third quarter. This exercise revealed areas that the NNR needs to follow-up on as part of its compliance assurance activities. This will enhance the effectiveness of the emergency plans that are in place and assure they are maintained while also assuring that adequate arrangements for nuclear security are in place. During the fourth quarter NECSA submitted a corrective action programme for the issues that were raised in the 2011 regulatory emergency exercise report. The corrective action programme was reviewed and accepted by the NNR. The NNR will follow-up on the adequacy of corrected actions in the first three quarters of the next financial year (2012/2013).
	To assure effective implementation of nuclear security measures by holders.	% implementation of the nuclear security strategy at quarterly intervals.	40%	0%	Target not achieved. Strategy in draft form.
Strengthen independent analytical verification capability and capacity within the NNR.	To establish an independent verification capability for the NNR.	% implementation of the key project milestones.	25%	64% (16/25) action plan.	Implementation of refurbishment has been delayed due to non-responsiveness to RFP from service providers. A second round of tendering has been initiated. Bids received are still to be evaluated.
Improve stakeholder relationships.	To develop and implement the stakeholder engagement strategy.	External stakeholder survey on NNR interactions.	Conduct annual stakeholder survey and review % increase/decrease.	0%	Not achieved.The stakeholder perception survey was not conducted as planned. This was mainly due to the need to allow implementation time for the new strategy, prior to measuring the stakeholder perception on NNR effectiveness.

Strategic Programmes	Objective	Measures	Targets 2011/2012	Actual Performance Achieved In 2011/2012	Explanatory Notes
Improve stakeholder relationships.	To fulfil international obligations.	Instances of enhancements made to the NNR as a direct result of participating in international forums and aligning/ complying with stated obligations.	At least one annually.	100%	The NNR participates at international forums which cover topics such as siting, emergency planning, safety standards, etc. The NNR has made input into the Siting Regulations which was gazetted and published by the Minister of Energy in Nov 2011. Draft regulation on monitoring and control of developments within the vicinity of Koeberg. These regulations have been drafted and revised with input from the City of Cape Town and are currently with the DoE for consideration. This will add to the improvements initiated by the NNR in the context of this performance target.
		Reports from CNS and Joint Convention on Spent Fuel and Waste Management.	Presentation of a CNS report at IAEA (Approval by Board and submission to Minister of Energy).	100%	Achieved.
		Strategic support to FNRBA.	Hosting FNRBA website.	N/A	This measure was subsequently dropped as FNRBA decided to be hosted elsewhere and NNR assistance was no longer required. This then rendered the measure irrelevant.
Financial Perspective					
Ensure financial viability and sustainability.	To ensure financial administration.	Adequate revenue to meet NNR strategic objectives.	2% revenue growth.	100% of budget adequacy.	
		Strategic objectives executed in accordance with allocated funds.	80%	98% budget utilisation.	
Internal Processes					
Create a high performance culture.	Define and implement service standards.	Compliance with service standards.	5% deviation from set service standards.	0%	This measure was deemed as too operational and low level, and was thus subsequently monitored at that level. It was therefore not monitored at the strategic level.
Promote good governance.	Maintaining governance structures.	Evaluation of Board effectiveness and improvement.	Annual Board evaluation report and appropriate interventions to improve effectiveness by 15%.	80%	Improvements in turn-around time for decision making at Board meetings due to efficiencies introduced and interventions implemented to ensure effective Board functioning.
	Institute and maintain a system of internal controls and risk management.	Maintain maturity level of risk management.	Level 2	100%	NNR is at level three (3) risk maturity, which is better than what was targeted for the year. This means that the control framework is in place. The focus is now on compliance with controls.

Strategic Programmes	Objective	Measures	Targets 2011/2012	Actual Performance Achieved In 2011/2012	Explanatory Notes
Promote good governance.	Develop and implement appropriate internal policy frameworks.	Up to date policies.	Up to date policy manual.	100%	Achieved in third quarter.
	Findings of Auditor-General.	No qualified audits.	No repeat findings on significant matters.	To be reported on in the second quarter of 2012/2013 after the AG's report.	Not applicable as it is to be determined with the next audit in the second quarter of 2012/2013.
Develop and maintain sound organisational infrastructure.	Develop and maintain sound organisational infrastructure.	Improved security of NNR offices.	Implementation of SAPS recommendations on security.	100%	This measure was deemed as more of an activity and has been reported at that level.
		Offices in a good state of repair.	100% implementation of maintenance programme.	50%	Ongoing maintenance programme not developed for interior, however *ad hoc* repairs are carried out as and when required.
		Implementation of ICT strategy.	50% implementation of ICT strategy.	37.6%	
			90% compliance with OHS Act.	90% compliance with OHS Act.	
Learning and growth					
Appropriate deployment and management of talent and knowledge.	Talent management system.	Establish and maintain a Staff Development Programme.	Development programme implemented in line with skills development strategy.	78%	The talent management programme is indicating positive progress, due to current ongoing realigning of policies, programmes and procedures with the overall HR strategy and structure.
		Implement a succession plan.	Succession measures implemented in line with succession plan.	50%	The succession plan programme ran behind schedule due to a realigning of policies, programmes and procedures in these areas with the overall HR strategy.
		Recruitment practices in line with policies.	100% compliance with recruitment policy. Recruitment conducted in line with EE Plan.	100%	Achieved.
		Employment equity plan/report and work place skills plan reports.	100% compliance with schedule for submission of reports.	100%	The EE Plan was submitted to the authority in the fourth quarter and a training report was submitted in place of a workplace skills report.
		Implementation of service benefits to employees.	Service benefits implemented accordingly with <2% error margin.	0%	This measure was deemed as more of an activity and has been reported at that level. It was therefore not monitored at the strategic level.
	Knowledge management system.	Implement Knowledge Management Strategy.	50% implementation of Knowledge Management Strategy.	13%	Not achieved. Knowledge Management Strategy developed. Pending approval.
		Performance management.	100% signed performance contracts for all NNR employees.	100%	Achieved.



6. CORE BUSINESS

The regulation of nuclear activities at the NNR is performed by two technical divisions, namely Standards, Authorisations, Reviews and Assessments (SARA) and Compliance Assurance and Enforcement (CAE).

6.1 Standards, Authorisations, Reviews and Assessments (SARA) Division

The SARA Division is primarily responsible for the management of the following functions at the NNR:

- Development of nuclear safety standards related to the core areas such as radiation, nuclear, waste and transport safety. Granting authorisations for nuclear installations, nuclear vessels, mining and minerals processing facilities / activities, and certificates of exemption;
- Conducting safety assessments for all actions, projects, and regulated activities by reviews and assessments, and
- Managing special nuclear related projects of a regulatory nature.

The activities of the SARA division include;

- Developing and implementing regulatory programmes for the regulation of NPPs, fuel cycle, research reactors, NORM facilities and other actions.
- Regulating the safe operation of existing holders of nuclear authorisations and preparation for applications related to nuclear expansion.
- Conducting regulatory emergency preparedness and response, and security exercises.

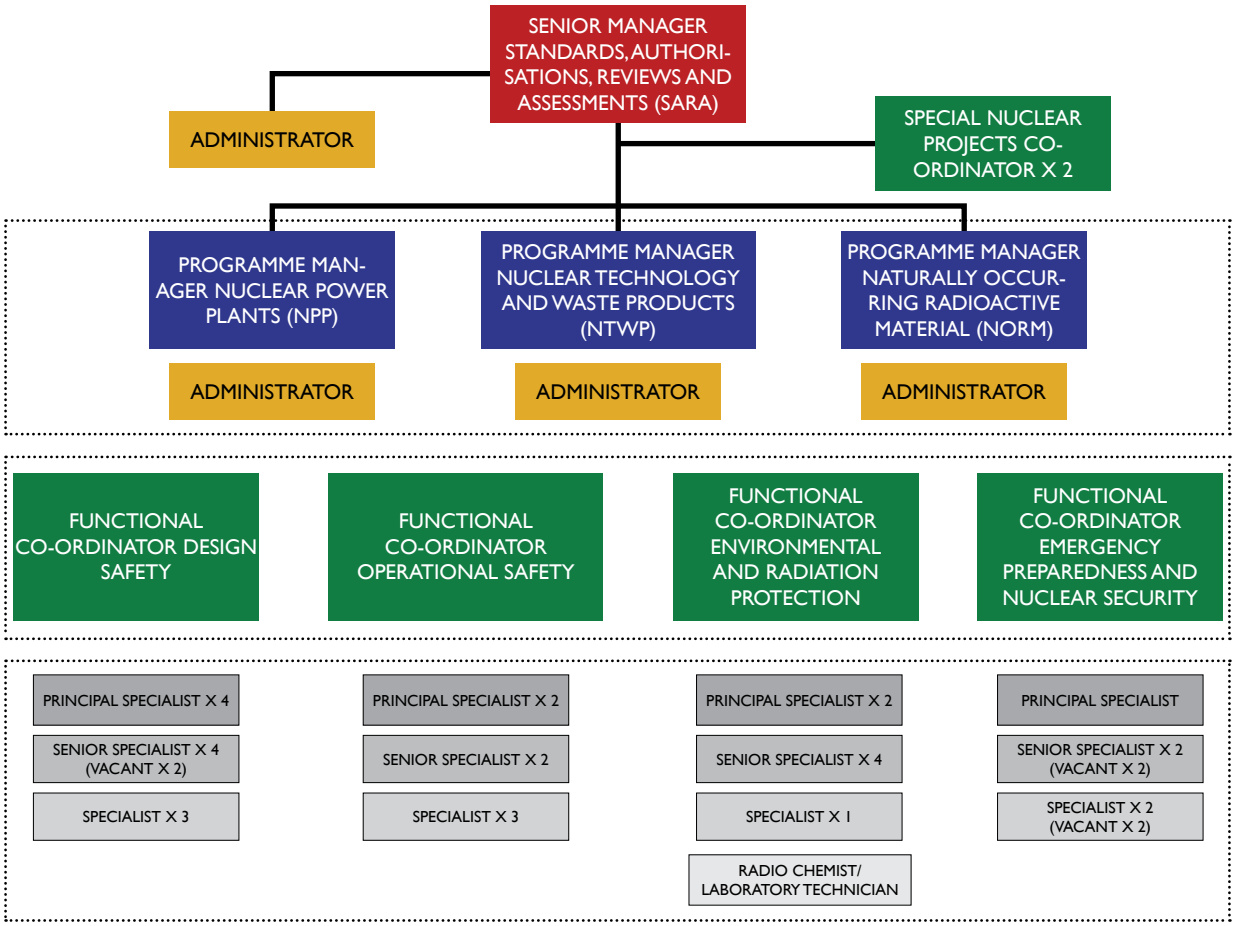


Diagram 1: Standards, Authorisations, Reviews and Assessments (SARA) division

6.2 Compliance Assurance and Enforcement (CAE) Division

The CAE division is primarily responsible for the management of all Compliance Assurance and Enforcement activities, processes and programmes for regulated nuclear technologies and actions at the NNR. The CAE division ensures the establishment of effective and efficient systems related to Compliance Assurance and Enforcement activities relating to nuclear safety and security. These include conducting compliance assurance inspections, audits, investigations, surveillances, environmental monitoring and sampling activities.

Activities of the CAE division include:

- Providing assurance of safety performance of holders of a nuclear authorisation through inspections, audits, investigations and taking of enforcement action for identified non-compliances.
- Strengthening independent analytical verification capability and capacity within the NNR.
- Enhancing regulatory programmes and the application of safety focused research.

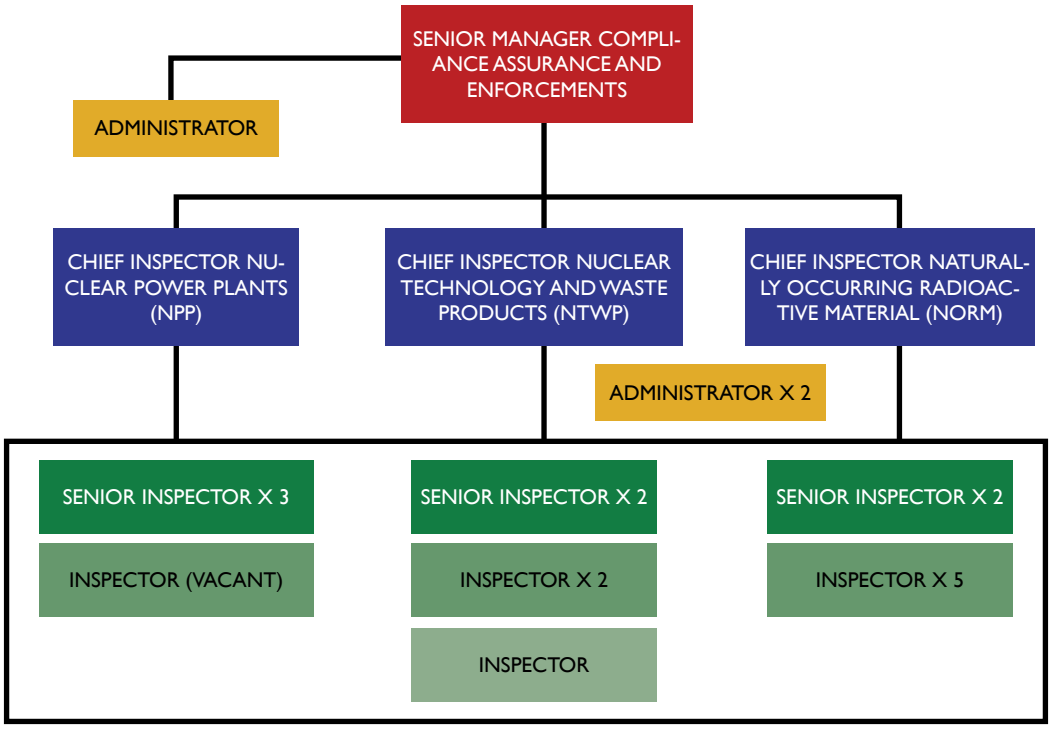


Diagram 2: The Compliance Assurance and Enforcement (CAE) division

6.3. Regulation of Nuclear Activities

In accordance with the provisions of the NNR Act, the NNR is mandated to exercise regulatory control over nuclear installations, nuclear vessels and other actions capable of causing nuclear damage. The purpose of the regulatory process is to ensure the protection of persons, property and the environment from nuclear damage. The regulatory process entails authorisation, safety case review and assessment, and the undertaking of compliance assurance and enforcement activities as appropriate.

6.3.1 Nuclear Authorisation Process

Prior to the granting of an authorisation, the applicant is required to apply to the NNR, in the prescribed format, detailing the intended activities and providing a demonstration of safety and compliance to the NNR requirements. The documentation submitted must address licensing aspects in the design of any facilities concerned and safety in the way the facility will be constructed, commissioned, operated, maintained and decommissioned.

The authorisation conditions represent a framework within which the applicant or holder of the nuclear authorisation is obliged to comply with particular requirements in respect of design, operation, maintenance and decommissioning. The conditions of authorisation also oblige the holder of the authorisation to provide a demonstration of compliance through the submission of routine and non-routine reports.

Standard conditions included in a nuclear authorisation address:

- The description and configuration of the authorised facility or action;
- Requirements in respect of modification to facilities;
- Operational requirements in the form of operating technical specifications, procedures or programmes as appropriate;
- Maintenance testing and inspection requirements;
- Operational radiation protection programmes;
- Radioactive waste management programmes;
- Emergency planning and preparedness requirements as appropriate;
- Physical security;
- Transport of radioactive material;
- Public exposure safety assessments;
- Quality assurance; and
- Reporting.

6.3.2 Safety Case Review and Assessment

A safety case is a collection of safety arguments and evidence in support of the safety of a facility or action. The safety case provided must identify and characterise all sources of radiation associated with the facility, and all possible exposure pathways that may arise from such sources, under normal operating conditions and under accident situations.

The NNR undertakes an evaluation of the submitted documentation to ensure that the action or facility will meet the standards and requirements for safe operation. From the evaluation, conditions are identified for inclusion in the nuclear authorisation.

6.3.3 Compliance Assurance

The NNR conducts compliance assurance activities to determine the extent to which holders of nuclear authorisations comply with the conditions of authorisation. The nature of the NNR's compliance assurance activities is commensurate with the nature of authorisation issued and the risk posed by the facility or action.

The compliance assurance activities involve a combination of audits, routine inspections, non-routine inspections, review of routine reports and review of occurrence reports.

6.3.4 Enforcement

Where non-compliance with the conditions of authorisation is identified, the NNR may initiate enforcement actions. Enforcement actions are designed to respond to non-compliances with specified conditions and requirements. The enforcement actions are commensurate with the seriousness of the non-compliance and may take the form of written warnings, penalties, curtailment of operations, suspension of the authorisation, or ultimately withdrawal of the authorisation. In all cases, the holder of the authorisation is required to:

- Remedy the non-compliance to:
  - Perform a thorough investigation in accordance with an agreed timescale; and
  - Take all necessary measures to prevent recurrence.

In certain instances, the NNR performs its own investigation.

6.4. Authorisations

A nuclear authorisation is the process of granting a written approval by the National Nuclear Regulator to applicants and / or operating organisations to perform nuclear related activities as detailed in the scope of authorisation.

The authorisation process involves receiving, reviewing and approval of authorisation requests from applicants and / or authorisation holders.

The NNR Act makes provision for the granting of four categories of nuclear authorisation. These are:

- Nuclear Installation Licences;
- Nuclear Vessel Licences;
- Certificates of Registration, and
- Certificates of Exemption.

6.4.1 Nuclear Installation Authorisations (NIL) granted by the NNR

The following tables detail the holders of nuclear authorisations granted by the NNR to date:

Authorisation No.	Nuclear Installations (NIL)
NIL-01	Koeberg Nuclear Power Station
NIL-02	SAFARI - 1 Research Reactor
NIL-03	P2700 Complex
NIL-04	Thabana Complex comprising the following facilities: • Thabana Pipe Store; • Thabana Radioactive Waste Storage facility; • Thabana Containerised Radioactive Waste Storage facility; • CaF2 Ponds.
NIL-05	HEU Vault – K0090
NIL-06	A-8 Decontamination Facility
NIL-07	Building A-West Drum Store
NIL-08	ELPROD in Building P-2500
NIL-09	UMET in Building P-2600
NIL-10	Conversion Plant Complex
NIL-11	Area 14 waste management Complex
NIL-12	Quarantine Storage Facility

Authorisation No.	Nuclear Installations (NIL)
NIL-13	V-YB Pelindaba East Bus Shed Complex
NIL-14	Pelindaba East Evaporation Ponds Complex
NIL-15	Oil Purification Facility
NIL-16	Area 21 Storage Facility
NIL-17	BEVA K3 Storage Complex
NIL-18	Area 16 Complex
NIL-19	Area 40 Complex
NIL-20	Area 27 De-Heeling Facility
NIL-21	J-Building
NIL-22	D-Building
NIL-23	C-Building
NIL-24	Building P-2900
NIL-25	Building XB
NIL-26	BEVA Evaporation Ponds
NIL-27	Building P-2800
NIL-28	Vaalputs National Radioactive Waste Disposal Facility
NIL-29	Area 26
NIL-30	E-Building
NIL-31	Dorbyl Camp
NIL-32	X-Building
NIL-33	Building P-1500
NIL-34	YM Vacuum Workshop
NIL-35	V-H Building Laboratories
NIL-36	P-1900 Laboratories
NIL-37	P-1600 Laboratories
NIL-38	Fuel Development Laboratories Complex
NIL-39	NTP Radiochemicals Complex
NIL-40	Pelindaba Analytical Laboratories (PAL) in Building BEVA-E1
NIL-41	Liquid Effluent Treatment Facility Complex
NIL-42	B-1 Building Basement

6.4.2 Certificates of Registration (COR) granted by the NNR

Certificate of Registration (COR)			
	COR Number	Name of COR Holder	Type of COR issued
1	COR-2	AngloGold Ashanti Limited: Vaal River Operations	Mining and mineral processing
2	COR-3	AngloGold Ashanti Limited: West Wits Operations	Mining and mineral processing
3	COR-4	AngloGold Ashanti Limited: Ergo Operations	Mining and mineral processing
4	COR-5	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (Tshepong, Matjhabeng and Bambani Operations)	Mining and mineral processing
5	COR-6	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (Joel Operation)	Mining and mineral processing

	COR Number	Name of COR Holder	Type of COR issued
6	COR-7	African Rainbow Minerals Gold Limited (Welkom Operations)	Mining and mineral processing
7	COR-10	Avgold Limited: Target Division	Mining and mineral processing
8	COR-11	Gravelotte Mines Limited	Mining and mineral processing
9	COR-13	MTC Demolition	Scrap processor
10	COR-16	Nuclear Fuels Corporation of SA (Pty) Ltd	Mining and mineral processing
11	COR-18	South Deep Joint Venture	Mining and mineral processing
12	COR-19	Palabora Mining Company (Pty) Ltd	Mining and mineral processing
13	COR-20	Foskor Limited (Phalaborwa)	Mining and mineral processing
14	COR-22	Fer-Min-Ore (Pty) Ltd (Zirtile Milling)	Mining and mineral processing
15	COR-23	Steenkampskraal Monazite Mine (Pty) Ltd	Mining and mineral processing
16	COR-25	Eggerding SA (Pty) Ltd	Mining and mineral processing
17	COR-26	Richards Bay Iron and Titanium (Pty) Ltd	Mining and mineral processing
18	COR-27	Foskor Limited (Richards Bay)	Fertiliser manufacturer
19	COR-28	Randfontein Estates Limited (Kusasaletheu)	Mining and mineral processing
20	COR-30	Mine Waste Solutions (Pty) Ltd	Mining and mineral processing
21	COR-31	Ya-Rona Scrap Metals	Scrap processor
22	COR-33	Rampete Metal Processors (Pty) Ltd	Scrap processor
23	COR-34	DMC Energy (Pty) Ltd	Mining and mineral processing
24	COR-37	Harmony Gold Mining Company Limited (Free State Operations)	Mining and mineral processing
25	COR-38	Omnia Phosphates (Pty) Ltd	Fertiliser manufacturer
26	COR-39	Yara South Africa (Pty) Ltd	Scrap processor
27	COR-40	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (St Helena Operations)	Mining and mineral processing
28	COR-41	Blyvooruitzicht Gold Mining Company Limited	Mining and mineral processing
29	COR-43	Exxaro KZN Sands	Mining and mineral processing
30	COR-45	Anglo Operations Limited: (Rand Scrap Iron)	Mining and mineral processing
31	COR-46	Evander Gold Mines Limited	Mining and mineral processing
32	COR-47	Grootvlei Properties Mines Limited	Mining and mineral processing
33	COR-48	DRDGOLD Limited	Mining and mineral processing
34	COR-49	Umicore SA (Pty) Ltd	Mining and mineral processing
35	COR-50	Rappa Resources (Pty) Ltd	Mining and mineral processing
36	COR-51	Consolidated Modderfontein(Pty) Ltd	Mining and mineral processing
37	COR-52	Nigel Gold Mining Company Limited	Mining and mineral processing
38	COR-53	East Rand Proprietary Mines Limited	Mining and mineral processing
39	COR-54	Cronimet (RSA) Pty Ltd	Scrap processor
40	COR-57	Crown Gold Recoveries (Pty) Ltd	Mining and mineral processing
41	COR-58	Harmony Gold Mining Company Limited (Randfontein Operations)	Mining and mineral processing
42	COR-59	Industrial Zone Limited	Mining and mineral processing
43	COR-61	Sedex Minerals	Mining and mineral processing
44	COR-64	Potchefstroom Plastiek Herwinning BK	Scrap processor
45	COR-66	Mintek	Small user
46	COR-69	GFI Mining SA (Pty) Ltd (Driefontein Operations)	Mining and mineral processing
47	COR-70	GFI Mining SA (Pty) Ltd (Kloof Operation)	Mining and mineral processing

	COR Number	Name of COR Holder	Type of COR issued
48	COR-71	GFI Mining SA (Pty) Ltd (Beatrix Operation)	Mining and mineral processing
49	COR-76	Blastrite (Pty) Ltd	Mining and mineral processing
50	COR-77	Anglo American Research Laboratories (Pty) Ltd	Small user
51	COR-74	Durban Roodepoort Deep Mine	Mining and mineral processing
52	COR-79	Durban Roodepoort Deep Limited	Mining and mineral processing
53	COR-80	Mogale Gold (Pty) Ltd	Mining and mineral processing
54	COR-81	Metrec	Mining and mineral processing
55	COR-84	The Big Bin CC	Scrap processor
56	COR-86	Glenover Phosphate Limited (Mining Site Operation)	Mining and mineral processing
57	COR-87	Rand Refinery Limited	Mining and mineral processing
58	COR-92	The Forensic Science Laboratory, SA Police	Small user
59	COR-95	Microzone Trading 69 CC	Scrap processor
60	COR-97	Geratech Zirconium Beneficiation Limited	Mining and mineral processing
61	COR-98	B G Scrap Metals (Pty) Ltd	Scrap processor
62	COR-99	Roode Heuwel Sand Limited	Mining and mineral processing
63	COR-100	South African Airforce (SAAF), Department of Defence (DoD), RSA	Small user
64	COR-101	The Reclamation Group (Pty) Ltd (Richards Bay)	Scrap processor
65	COR-103	Linbeck Metal Trading (Pty) Ltd	Scrap processor
66	COR-104	South African Port Operations (Dry Bulk Terminal Richards Bay, a division of Transnet Limited)	Mining and mineral processing
67	COR-105	Tantalite Resources	Scrap processor
68	COR-106	Mineral Sands Resources (Pty) Ltd	Mining and mineral processing
69	COR-107	Vesuvius South Africa (Pty) Ltd	Mining and mineral processing
70	COR-109	SM Mining Construction (Pty) Ltd	Mining and mineral processing
71	COR-110	Geotron Systems (Pty) Ltd	Small user
72	COR-111	Bosveld Phosphate	Mining and mineral processing
73	COR-112	Scaw Metals Group	Scrap processor
74	COR-117	Vic Ramos CC	Scrap processor
75	COR-118	Gold Plats Recovery Limited	Mining and mineral processing
76	COR-119	Huntrex 196 (Pty) Ltd (trading as Ceracast)	Mining and mineral processing
77	COR-132	Grifo Engineering (Pty) Ltd	Small user
78	COR-135	Tioxide SA (Pty) Ltd	Mining and mineral processing
79	COR-159	North West Reclaiming	Scrap processor
80	COR-160	Shiva Uranium One	Mining and mineral processing
81	COR-164	Sulzer Pumps (SA) Limited	Service provider
82	COR-165	UraminMagoLukisa	Mining and mineral processing
83	COR-166	Weston Scrap Metal	Scrap processor
84	COR-167	Western Uranium (Pty) Ltd	Mining and mineral processing
85	COR-178	Durban Container Terminal: Business Unit of SA Port Operations	Small user
86	COR-180	SA Port Operations Container Terminal Cape Town	Small user
87	COR-181	Transnet Limited (SA Port Operations: Multipurpose Terminal, Saldanha Bay)	Small user
88	COR-182	Buffelsfontein Gold Mine Limited	Mining and mineral processing
89	COR-183	Tasman Pacific Minerals (Pty) Ltd	Mining and mineral processing
90	COR-186	AfriSam (Pty) Ltd	Small user

	COR Number	Name of COR Holder	Type of COR issued
91	COR-190	Ezulwini Mining Company Limited	Mining and mineral processing
92	COR-194	Exxaro Resources	Small user
93	COR-195	Houlgon Uranium and Power (Pty) Ltd	Mining and mineral processing
94	COR-197	Gold Reef City Theme Park	Small user
95	COR-198	Set Point Industrial Technologies (Pty) Ltd (Isando)	Small user
96	COR-199	Uramin Mago Lukisa	Mining and mineral processing
97	COR-200	Uramin Mago Lukisa	Mining and mineral processing
98	COR-201	A&S Mining Supplies	Service provider
99	COR-203	Cemo Pumps (Pty) Ltd	Service provider
100	COR-204	Holgoun Energy (Pty) Ltd	Mining and mineral processing
101	COR-206	Uranium One and Micawber 397 (Pty) Ltd	Mining and mineral processing
102	COR-207	Set Point Industrial Technologies (Pty) Ltd (Mokopane)	Small user
103	COR-210	Tasman Pacific Minerals (Pty) Ltd	Mining and mineral processing
104	COR-211	Tasman Pacific Minerals (Pty) Ltd	Mining and mineral processing
105	COR-215	Margaret Water Company	Mining and mineral processing
106	COR-216	Paddy's Pad 1183 (Pty) Ltd	Mining and mineral processing
107	COR-217	Cango Caves Oudtshoorn Municipality	Small user
108	COR-218	Grindrod Terminals (Pty) Ltd	Service provider
109	COR-219	Southgold Exploration (Pty) Ltd	Mining and mineral processing
110	COR-220	African Empowered Aggregates CC	Mining and mineral processing
111	COR-221	Tasman Pacific Minerals (Pty) Ltd	Mining and mineral processing
112	COR-222	Tasman Pacific Minerals (Pty) Ltd	Mining and mineral processing
113	COR-223	Tasman Pacific Minerals (Pty) Ltd	Mining and mineral processing
114	COR-225	New Kleinfontein Goldmine (Pty) Ltd	Mining and mineral processing
115	COR-226	Rand Uranium (Pty) Ltd	Mining and mineral processing
116	COR-227	WG Wearne Limited	Small user
117	COR-228	Ergo Mining (Pty) Ltd	Mining and mineral processing
118	COR-229	The New Reclamation Group (Pty) Ltd	Scrap processor
119	COR-230	ALS Chemex South Africa (Pty) Ltd	Small user
120	COR-232	Central Rand Gold South Africa (Pty) Ltd (West)	Mining and mineral processing
121	COR-233	Central Rand Gold South Africa (Pty) Ltd (East)	Mining and mineral processing
122	COR-234	Pamodzi Gold Orkney (Pty) Ltd	Mining and mineral processing
123	COR-235	IM Motlhabane Farming CC (trading as Motlhabane Recycle Scrap)	Scrap processor
124	COR-236	Reclaim Invest 101 (Pty) Ltd	Scrap processor
125	COR-238	Exxaro TSA Sands (Pty) Ltd (Namakwa Sands Operations)	Mining and mineral processing
126	COR-239	Aflease Gold Limited	Mining and mineral processing
127	COR-240	Tantus Trading 180 (Pty) Ltd	Mining and mineral processing
128	COR-242	EnviroMzingazi Gypsum (Pty) Ltd	Small user
129	COR_245	Namakwa Uranium (Pty) Ltd	Mining and mineral processing
130	COR_246	NTP Logistics (Pty) Ltd	Service provider
131	COR-247	SGS South Africa (Pty) Ltd	Small user
132	COR-248	Foskor Zirconia (Pty) Ltd	Mining and mineral processing
133	COR-249	Pro Mass Transport (Pty) Ltd	Mining and mineral processing

	COR Number	Name of COR Holder	Type of COR issued
134	COR-250	JCI Gold Limited	Mining and mineral processing
135	COR-252	Harmony Gold Mining Company Limited (South Operations)	Mining and mineral processing
136	COR-253	Avgold Limited (North Operations)	Mining and mineral processing
137	COR-254	WS Renovations Contractors	Service provider
138	COR-255	Genalysis Laboratory Services (SA) (Pty) Ltd	Small user
139	COR-256	Chifley Trading CC	Service provider
140	COR-257	Samco Investments (Pty) Ltd	Scrap processor
141	COR-258	SA Metal and Machinery Company (Pty) Ltd	Scrap processor
142	COR-259	University of Pretoria	Small user
143	COR-260	African Mineral Standards (a division of Set Point Industrial Technology (Pty) Ltd	Small user
144	COR-261	North West University	Small user
145	COR-262	UIS Analytical Services (Pty) Ltd	Small user
146	COR-263	Aklin Carbide (Pty) Ltd	Service provider
147	NL-105	Village Main Reef Gold Mining Company Limited	Mining and mineral processing

6.4.3 Certificates of Exemption(COE) granted by the NNR

Certificate of Exemption (COE)		
COE Number	Name of COE Holder	Conditions of COE
COE-02	Oranje Mynbou en Verwoer Maatskappy (Potch Gypsum)	Conditions for release of Waste Rock below 0.5 Bq/g

6.4.4 Nuclear Vessel Licence (NVL) granted during the reporting period

NVL Number	Name of NVL Holder	Category 1
NVL-009	Edlow International Incorporated in the United States	Category 1
NVL -10	Nuclear Vessel Licence issued to Necsa for the non-nuclear powered cargo vessel Ocean Bird	

6.5 Nuclear Power – Koeberg Nuclear Power Station

Koeberg Nuclear Power Station (KNPS) is currently the only nuclear power station in South Africa and the entire African continent. It is located in Melkbosstrand on the west coast of South Africa. Koeberg is owned and operated by South Africa's only national electricity supplier, Eskom. The two nuclear reactors at the power station form the cornerstone of the South African nuclear power generation programme. Koeberg supplies power to the national grid so that overcapacity can be redistributed to the rest of the country on an as-needed basis. Low and intermediate level waste from Koeberg is transported by road in steel and concrete containers to a rural disposal site at Vaalputs, located 600 km away in the Northern Cape Province.

Eskom operates the Koeberg Nuclear Power Station comprising two 900 megawatt electrical (MWe) pressurised water reactors (PWRs), on the Atlantic coast 40 km north of Cape Town. The station was built by a French consortium with Framatome being responsible for the nuclear island, Alsthom Atlantique for the conventional island, Spie Batignolles for the civil works and Frameteg for the overall project co-ordination. The first Nuclear Licence, NL-1, was issued to Eskom for the construction of the power station, which commenced in 1976. The two units were brought into commercial operation in July 1984 and November 1985 respectively.

In terms of the NNR Act, nuclear installation licences contain conditions deemed necessary to ensure the protection of persons, property and the environment against nuclear damage. The current Koeberg Nuclear Installation Licence, NL-1 variation 17, contains 19 conditions.

Koeberg Nuclear Power Station

In terms of Section 26(2) of the NNR Act, Eskom, as the nuclear licence holder, implements an inspection programme to ensure compliance with the conditions of the Nuclear Installation Licence, NL-1. The NNR implements an independent system of compliance inspections to provide assurance of compliance with the conditions of the nuclear licence in terms of section 5(d) of the NNR Act. The regulatory approach to the licensing of nuclear installations such as KNPS is largely based on risk and the application of international safety standards and practices.

6.5.1 Occupational Exposure to Radiation

General regulatory dose limits prescribed by the NNR

The NNR prescribes that occupational exposure of any worker shall be controlled to ensure that the limits shown in the table below are not exceeded.

Workforce	Regulatory criteria
Maximum individual worker dose	An (average) effective dose of 20mSv per annum averaged over five consecutive years. A (maximum) effective dose of 50mSv in any year.
Average individual worker dose	Controlled by application of the ALARA principle. The ALARA target for the annual average individual dose is 4mSv per annum.

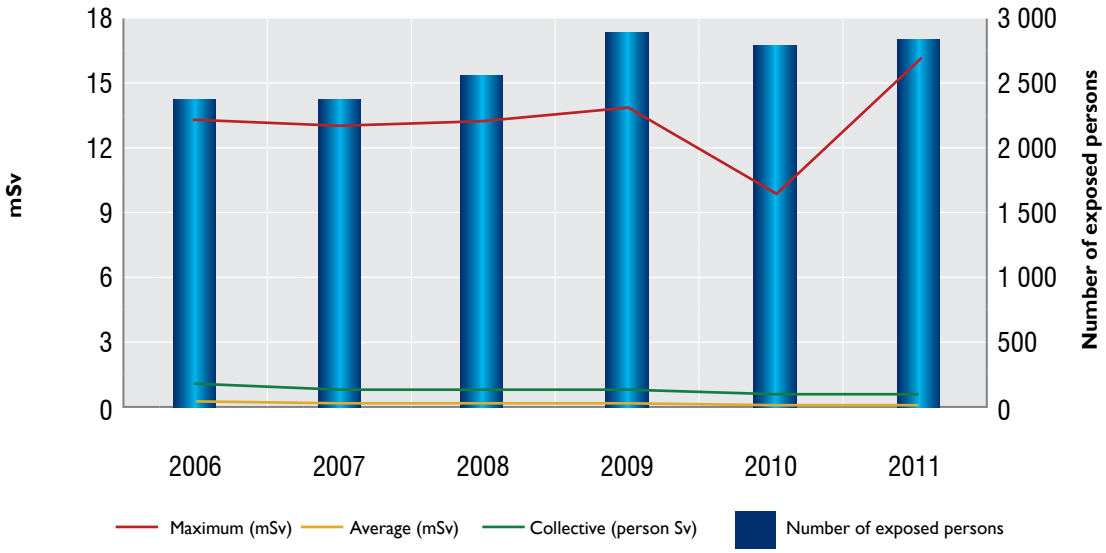


Fig 1 : Occupational exposure at Koeberg (2006 to 2011)

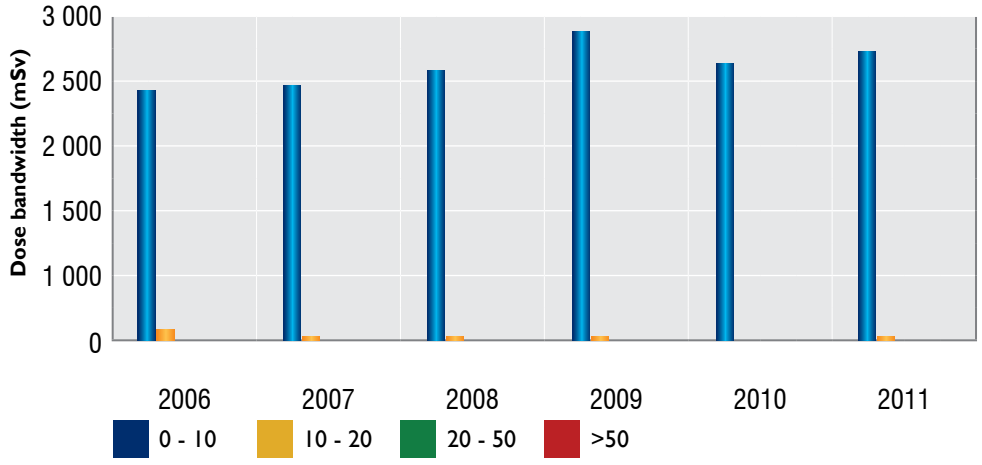


Fig 2 : Occupational exposure at Koeberg (2006 to 2011)

The worker doses at KNPS during the period under review were within regulatory limits. Radiation exposure of personnel working at KNPS is subject to control by the operational radiation protection programme. This programme ensures that control within the annual individual dose limit is achieved. In addition, the programme also serves to ensure that all doses are kept as low as reasonably achievable (ALARA). The highest annual individual dose accrued during 2011 was 17.032mSv. The total annual collective dose to the workforce for the year was 1.06 personSv. The average annual individual dose of the total exposed occupational workforce was approximately 0.38mSv.

The maximum and average doses are acceptable considering the regulatory limits of 20mSv and the ALARA target of 4mSv respectively.

The dose distribution arising from the individual exposures accrued from 2006 to 2011 is illustrated in the figures above.

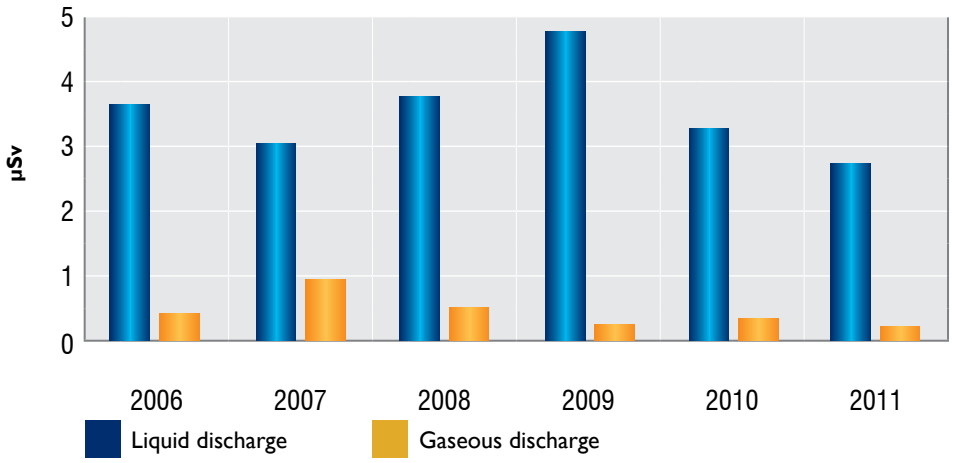


Fig 3: Projected public dose (gaseous and liquid) 2006 to 2011

6.5.2 Public Exposure to Radiation

The regulatory annual effective dose limit prescribed by the NNR for members of the public from authorised actions is 1mSv. No action may be authorised which would give rise to any member of the public receiving a radiation dose from all authorised actions exceeding 1mSv in a year. There were no safety concerns regarding the safety of the public living around KNPS during the period under review. In accordance with the conditions of licence and the Regulations on Safety Standards and Regulatory Practices (SSRP), published as Regulation No. R 388 dated 28 April 2006, the public doses resulting from effluent discharges from the KNPS must comply with the dose constraint of 0.25mSva-1 and the system of Annual Authorised Discharge Quantities (AADQ's) applicable to the site. KNPS complied with the AADQs and the projected public doses resulting from the effluent releases (both liquid and gaseous) were well within the dose constraint for the 2011 calendar year. The maximum public dose for 2011 was determined to be 0.002962mSv which is considered acceptable given the NNR regulatory limit of 0.250mSv per annum for Koeberg.

The projected public dose (gaseous and liquid) from Koeberg for 2006 to 2011 is illustrated in Fig 3 above.

6.5.3 Percentage AADQ in effluent discharged during 2011

The effluent discharges for key radionuclides for 2011 are given in the table below. These show compliance to the Annual Authorised Discharge Quantities (AADQs), which are established to ensure compliance with the public dose limit referred to in the following table.

Table 1: Percentage of AADQ in effluent discharged during calendar year 2011

Liquid transport pathway		Atmospheric transport pathway	
Radionuclide	% of quarterly AADQ	Radionuclide	% of quarterly AADQ
Ag-110m	17.91	H-3	1.72
Co-57	17.55	I-131	2.14
Co-58	9.83	I-132	9.25
Co-60	7.99	I-133	1.48
H-3	7.24	I-134	14.93
Mn-54	1.91	I-135	3.86
Nb-95	2.01		

6.5.4 Nuclear Safety

The authorisation holder's commitments to safety of the plant and operations have been evidenced in the inspections performed. Where it has been seen that areas of weakness have occurred, these have been addressed by proper investigation and the implementation of appropriate corrective actions.

A major part of the NNR's work in the area of nuclear safety relates to in-depth safety assessments associated with KNPS. During the period under review the NNR focused its safety assessment activities primarily on the areas summarised below:

- **Reassessment of Koeberg following the Fukushima accident**
  Following the Fukushima accident, the NNR directed Eskom to reassess the response of Koeberg to withstand external hazards. The NNR has reviewed the safety reassessment report submitted by Eskom. The reassessment did not reveal any major shortcomings in the safety of Koeberg in respect to external events. A number of modifications and operating procedure changes to further improve safety were however identified. The NNR has responded to Eskom, requiring a plan of corrective actions in accordance with timelines to be agreed with the NNR.

- **Second safety reassessment**

NNR safety case review discussion

The second periodic reassessment of Koeberg has been completed by Eskom. The report on the reassessment, which commenced in April 2008, has been submitted to the NNR. The NNR has undertaken to review this submission within a reasonable timeframe, which will culminate in a report about the continued safe operation of the plant.

- **IAEA OSART mission**
  The OSART mission (Operational Safety Review Team of the IAEA) on Koeberg took place over the period 23 August to 8 September 2011. The scope included: safety culture management; organisation and administration; operations; maintenance; technical support (engineering); operating experience; radiation protection; chemistry; and severe accident management. The official mission report has not yet been received.

- **Koeberg Operational Technical Specifications**
  Revision 7 of the Koeberg Operational Technical Specification (OTS), which was developed based on the OTS for the CP-1 family of plants in France similar to Koeberg, was reviewed and approved by the NNR in the period under review.

- **AGORA Fuel**
  Eskom requested approval from the NNR to load four AGORA-A Lead Fuel Assemblies in Unit 2 during outage 18 as a precursor to the use of this type of fuel at Koeberg. The NNR concluded the review and approved the implementation for outage 18 of Unit 2.

- **Reactor operator licensing**
  The Initial Licence Training (ILT) of six reactor operator (RO) candidates and three senior reactor operator (SRO) candidates was conducted during February 2011. Three of the six RO candidates and two of the three SRO candidates successfully satisfied NNR requirements. The candidates that were not successful, qualified for a retake in terms of the NNR requirements, and passed the subsequent retake examinations.

- **Regulations on siting**
  Regulations on siting of new nuclear installations were promulgated during the period under review.

- **Regulations on control of developments**
  The NNR has revised the regulations on control of developments in the vicinity of Koeberg in response to comments received from the City of Cape Town, and is awaiting concurrence from the city.

- **Control of radioactive sources**
  The NNR has developed a set of requirements on the control of radioactive sources which will form the basis of regulations to be developed under its regulatory framework project.

- **Configuration control issue**
  The NNR raised a concern regarding overall quality of work (mainly by contractors), attention to detail, and record keeping at Koeberg, particularly in the areas of maintenance and in-service inspection. Following inspections, the NNR directed Eskom to submit a corrective action plan to address this issue. Eskom complied and the NNR will conduct inspections on the effectiveness of this plan during the current refuelling outage for Koeberg Unit 1.

- **Koeberg long-term asset management**
  Eskom notified the NNR that the Steam Generator Replacement (SGR) project has been approved. The project will entail replacement of six steam generators (three on each reactor unit). The NNR has requested Eskom to submit a proposed licensing schedule for the project, and is preparing for this project by developing requirements and undertaking recruitment of technical staff.

- **Spent fuel interim storage**
  Eskom has indicated to the NNR that the spent fuel storage capacity at Koeberg needs to be expanded and has proposed various options in this regard, which will be discussed at a forthcoming workshop.

6.5.5 Competency and Sufficiency of the Operator Workforce to Work Safely

The operator has demonstrated that there is a sufficient, adequate and competent workforce to execute the nuclear safety and radiation protection activities to support the operation of the nuclear installation and perform work safely as required.

6.5.6 Transport Safety

The transport of radioactive and nuclear material to and from the Koeberg site is done in accordance with the relevant transport requirements and regulations of the IAEA on the safe transport of radioactive material. Compliance assurance activities, including nuclear security inspections, give the assurance that transport of this nuclear and radioactive material is conducted safely.

The NNR issued a nuclear vessel licence NVL-11 to Eskom for shipment of nuclear fuel assemblies for Koeberg via Cape Town harbour over the period 24 August to 8 September 2011.

There were no safety concerns involving the transport of radioactive material in 2011.

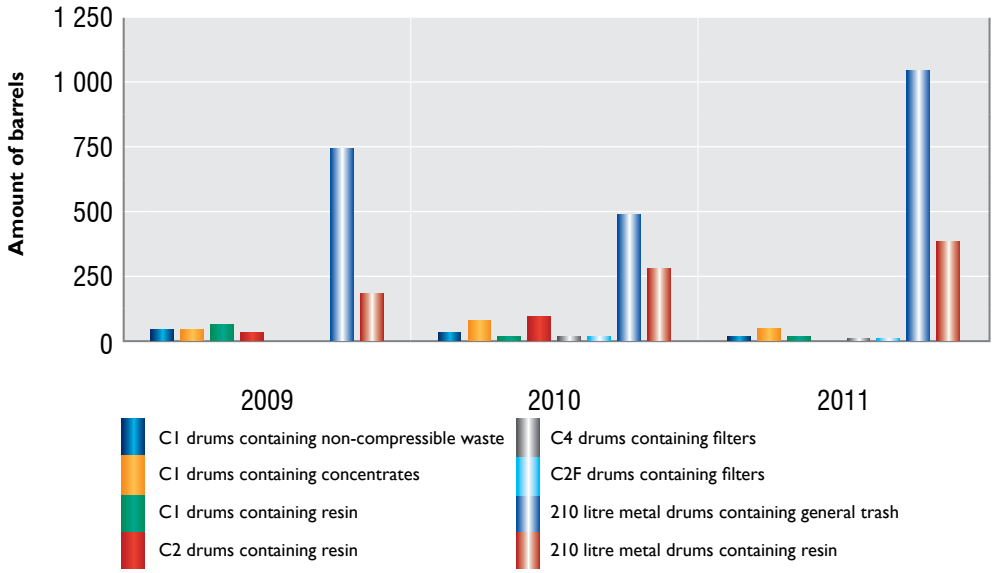


Fig 4: Inventory of solid radioactive waste produced and drummed from 2009 to 2011

6.5.7 Radioactive Waste Safety

Although the NNR issued a directive to Koeberg in terms of the management of radioactive waste packages to be transported to Vaalputs, the overall performance and operations related to the management of radioactive waste were acceptable. The operator demonstrated commitment to ensuring safety of radioactive waste, both in storing and transporting it.

6.5.8 Environmental Protection

There were no safety concerns regarding the environment around KNPS during the period under review.

6.5.9 Nuclear Emergency Planning and Preparedness

The remaining corrective actions from the 2010 Koeberg emergency exercise were concluded and accepted by the NNR. There were no planned regulatory emergency exercises during the period under review, however the NNR continued to conduct compliance assurance inspections to verify the adequacy and readiness of the Koeberg Integrated Emergency Plan. Overall, the Koeberg Integrated Nuclear Emergency Plan is viable, and the NNR is satisfied that Eskom and supporting organisations are adequately prepared to manage emergency situations.

6.5.10 Physical Security

The physical security requirements at Koeberg are monitored by both the NNR and national key points security functionaries. As part of its compliance assurance programme, the NNR conducts regular inspections at Koeberg to verify conformance to licensing requirements pertaining to physical security. The inspections conducted, revealed compliance to the regulatory requirements. The NNR is a member of the security Joint Planning Committee (JPC) and participates actively in the security projects initiated. There were no concerns with respect to physical security at the KNPS during the period under review.

6.5.11 Safety of Sealed Radioactive Sources

The safety of sealed radioactive sources, which falls under the jurisdiction of the NNR, is included in the compliance assurance programme. The inspection of sealed radioactive sources at the KNPS revealed that the radioactive sources are controlled as per the regulatory requirements. No anomalies were detected by the routine compliance assurance inspections conducted. No safety concerns were raised with regard to the safety of sealed radioactive sources.

6.5.12 Nuclear Incidents/Accidents Reported

The NNR was satisfied that the processes implemented at Koeberg relating to incidents/occurrences are acceptable and that plant safety performance was acceptable.

The NNR monitors incidents/occurrences at Koeberg in the following manner:

- Audits conducted on the Eskom processes relating to occurrences (i.e. plant monitoring, reporting, follow-up and close-out);
- Monitoring of the implementation of these processes;
- Monthly meetings between Eskom and the NNR at which experience feedback is discussed;
- Review of Eskom reports on experience feedback and safety performance indicators, which reflect occurrences and trends; and
- Direct assessment of selected significant occurrences.

There were no nuclear incidents or accidents as defined in the NNR Act reported during the period under review.

6.5.13 Regulatory Compliance Inspections

In order to verify the degree of compliance with the conditions of authorisation, the NNR undertakes independent inspections and audits.

The NNR conducted 60 inspections at Koeberg as part of its compliance assurance activities. The commensurate enforcement actions were taken to ensure that appropriate remedial measures are undertaken to reduce and prevent the recurrence of these identified non-compliances. In addition, the NNR responded to reportable events, including alleged dumping of nuclear waste at Three Anchor Bay in Cape Town. This turned out to be a protest staged by Greenpeace. In a separate event, a vehicle was impounded by the traffic department when the vehicle was claimed to be carrying radioactive material. This also turned out to be a hoax, as no evidence could be found.

6.5.14 Regulatory Warnings and Directives to Stop Work

In 2011 the NNR reported non-compliance to the conditions of authorisation on the following three occasions:

- *Radioactive Waste Management:* the NNR suspended all transportation of radioactive waste to Vaalputs from Koeberg. Prior to the recommencement of radioactive shipments, KNPS should ensure that the radioactive waste complies with the limits and requirements specified by the waste acceptance criteria for Vaalputs. The NNR lifted the suspension after performing an assessment of the new systems implemented by the KNPS, and an extensive process review and subsequent Human Reliability Analysis (HRA) were performed.
- *Medical Health Register:* the NNR inspections revealed correlation anomalies within the records. Eskom was instructed to implement corrective measures and these plans and actions were reviewed by the NNR. Monitoring and close-out of the actions is in progress.
- *Quality management:* the NNR inspections revealed shortcomings in the oversight and management of contractors. Eskom was instructed to implement corrective actions and these plans and actions are under review by the NNR to verify effectiveness in addressing the identified shortcomings.

6.5.15 Regulatory Independent Verification

As part of the independent verification of the environmental monitoring programme, the NNR conducted environmental sampling around the KNPS site. The samples collected are analysed by the radio analytical laboratory and the analysis results received, compared favourably with the results obtained from Eskom.

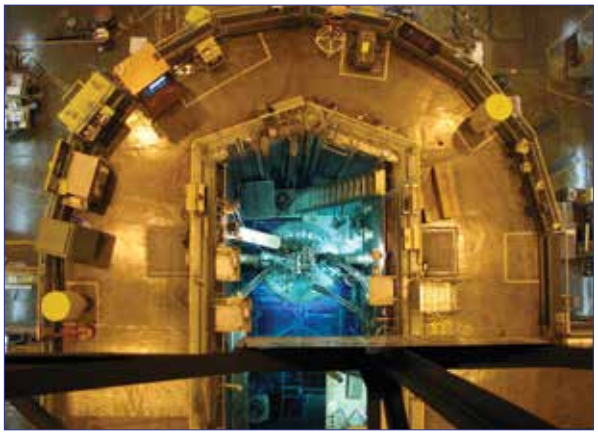
6.5.16 Regulatory Capacity

The NNR is satisfied that all safety-related work is performed by competent individuals. However, as this issue has the potential to impact on nuclear safety in the long run, the NNR will continue to monitor staffing and competency levels at Koeberg.

6.5.17 Appeals to the Chief Executive Officer

There were no appeals lodged with the CEO during the period under review.

6.6 Nuclear Technology and Waste – South African Nuclear Energy Corporation (NECSA) Pelindaba Site



Safari Research Reactor at Necsa

Established as a public company in terms of the Nuclear Energy Act, (Act no. 46 of 1999), the South African Nuclear Energy Corporation (Necsa), headquartered on the Pelindaba site, is wholly owned by the government. The Pelindaba site, comprising 658ha of land and 54ha of buildings and other improvements, is situated in the magisterial district of Madibeng in the North-West Province, approximately 25km west of Pretoria and 55km north-west of Johannesburg. The main functions of Necsa are to undertake and promote research and development in the field of nuclear energy and related technologies; to process and store nuclear material and other restricted material; and to co-ordinate with other organisations in matters falling within these spheres. Necsa supplies a wide range of high-technology products and services to South African and foreign market sectors, with the SAFARI-1 research reactor as the cornerstone of the commercial isotope production programme. In accordance with the conditions of licence, Necsa is required to ensure that arrangements, acceptable to the NNR, were established and implemented during the period under review.

Workforce	Regulatory criteria
Maximum individual worker dose	An (average) effective dose of 20mSv per annum averaged over five consecutive years. A (maximum) effective dose of 50mSv in any year.
Average individual worker dose	Controlled by application of the ALARA principle. The ALARA target for the annual average individual dose is 4mSv per annum.

6.6.1 Occupational Exposure to Radiation

General regulatory dose limits prescribed by the NNR

The NNR prescribes that occupational exposure of any worker shall be controlled to ensure that the dose limits shown in the table above are not exceeded.

Radiation exposure of personnel working at Pelindaba is subject to control by the Operational Radiation Protection Programme. This programme ensures that control within the annual individual dose limit is achieved. In addition, the programme also serves to ensure that all doses are kept as low as reasonably achievable (ALARA).

The worker doses at Pelindaba for the 2011 calendar year were within regulatory limits. The average effective radiation dose to occupationally-exposed workers was 0.7mSv for the 2011 calendar year, which was within the regulatory limit. The maximum cumulative dose accrued for an individual worker in the calendar year was 9.1mSv and the total collective dose for the 861 radiation workers was 582.6 personmSv. Over the reporting period Necsa demonstrated compliance with the dose limitation system for individual workers.

Figure 1 below details the occupational exposure from 2007 to 2011.

6.6.2 Public Exposure to Radiation

The regulatory annual effective dose limit, prescribed by the NNR for members of the public from authorised actions, is 1mSv. No action may be authorised which would give rise to any member of the public receiving a radiation dose from all authorised actions exceeding 1mSv in a year.

There were no concerns regarding the safety of the public living around Pelindaba during the period under review.

Fig 1: Occupational exposure at Pelindaba (2007 to 2011)

The conditions of nuclear authorisation for Necsa and the Regulations on Safety Standards and Regulatory Practices published as Regulation No. R388 dated 28 April 2006, require that public doses resulting from effluent discharges from the Necsa Pelindaba site, must comply with the dose constraint of 0.25mSvper annum and the system of AADQs is applicable to the site. Necsa demonstrated compliance with the AADQs and the projected public doses resulting from the liquid and gaseous effluent releases during the 2011 calendar year were 7.18 and 2.03µSv respectively.

Fig 2: Annual Authorised Discharge Quantities (AADQs) 2011

Quarter	Liquid pathway-dose in µSv/a	Gaseous pathway dose in µSv/a
1	1.801	0.641
2	1.752	0.457
3	2.360	0.584
4	1.265	0.343
Total for the calendar year *	**7.178**	**2.025**

** January to December 2011*

In accordance with the conditions of licence and the Regulations on Safety Standards and Regulatory Practices (SSRP), published as Regulation No. R388 dated 28 April 2006, the public doses resulting from effluent discharges from the Necsa Pelindaba site must comply with the dose constraint of 0.25mSva-1 and the system of Annual Authorised Discharge Quantities (AADQ's) is applicable to the site.

Necsa complied with the AADQ's, and the projected public doses resulting from the effluent releases (both liquid and gaseous), were well within the dose constraint for the 2011 calendar year. The projected dose to members of the public was calculated to be 0.01mSva^{-1}, with the liquid effluent contributing 0.007mSva^{-1} and the gaseous effluent contributing 0.002mSva^{-1}.

6.6.3 Nuclear Safety

A major part of the NNR's work in the area of nuclear safety relates to in-depth safety assessments associated with authorised Necsa facilities.

Public exposure to radiation

Liquid effluent	
1998	0.064
1999	0.09
2000	0.097
2001	0.014
2002	0.017
2003	0.012
2004	0.009
2005	0.004
2006	0.007
2007	0.007
2008	0.011
2009	0.0034
2010	0.0026
2011	0.0072

Public gaseous releases	
1998	0.006
1999	0.006
2000	0.004
2001	0.007
2002	0.003
2003	0.009
2004	0.001
2005	0.002
2006	0.001
2007	0.0013
2008	0.00214
2009	0.00296
2010	0.00214
2011	0.00203

During the period under review, the NNR focused its safety assessment activities primarily on the areas summarised below:

- **Application for New Nuclear Installation Licence for a Dedicated Isotope Production Reactor on the Necsa Pelindaba site**

  The NNR received an application for a new Nuclear Installation Licence from Necsa, on 23 August 2010. The proposed nuclear installation will be a reactor that is dedicated for the production of radioisotopes (Dedicated Isotope Production Reactor - DIPR). The reactor will be powered with Low Enriched Uranium (LEU) standard plate-type fuel and the reactor will have a maximum power output of 15 MW (t). The DIPR is intended to be installed in newly constructed buildings at a suitable location on the Necsa site and in close proximity to existing isotope production facilities which, together with the new reactor, form a production unit for radioisotopes.

  In February 2012, the applicant (Necsa) informed the NNR that it would no longer be pursuing a Nuclear Installation Licence for the proposed DIPR. The reasons cited where that the DIPR-type facility was no longer seen as being financially viable and that government and the Necsa Board are more in favour of a larger research reactor (SAFARI-2) similar to SAFARI-1. That would also serve as a replacement for SAFARI-1 in the longer term (note SAFARI-1 is 47 years old).

  The application will not be processed further and Necsa has been requested to submit a new application for the proposed SAFARI-2 Research Reactor.

- **Proposed Necsa smelter**

  Originating from Necsa's previous operations, approximately 14 000 tonnes of uranium-contaminated scrap metal is presently stored on the Pelindaba site. The greater portion of this metal consists of about 36 000 separation elements which, in accordance with non-proliferation agreements, should be destroyed completely. Necsa regards smelting as the most appropriate and cost-effective method to achieve this and had previously applied for a Nuclear Installation Licence for the construction and operation of a smelter for this purpose on the Pelindaba site.

NNR safety case review discussion

The NNR review of the safety case documentation for the proposed smelter has been ongoing for the last four years. The final update of the safety analysis report and design package was submitted to the NNR in October 2011 and in February 2012, the NNR approved the safety analysis report and associated licensing design package.

Following the above approvals, Necsa has submitted for NNR review, a draft Public Information Document (PID) to be used as part of the NNR public hearings that are to be undertaken prior to the NNR granting a Nuclear Installation Licence for the proposed smelter. It is anticipated that following NNR concurrence on the PID, the process of public hearings will be initiated in the next review period.

- **Approval for the import, transport and storage at the Necsa UMETFacility of 10 tonnes of depleted uranium from France**

  Following review of the associated safety documentation, the NNR granted approval for the import, transport and storage at the Necsa UMET facility (authorised under NIL09) of 10 tonnes of depleted uranium material

from France via the port of Cape Town. The depleted uranium will be transported in type IP-1 packages. For the transport by sea from France to the port of Cape Town, the material will be transported on board an INF 2 class vessel, authorised in terms of Nuclear Vessel Licence NVL-12 issued to Eskom in December 2011. The consignment arrived in Cape Town harbour on 10 January 2012 and was then transported to Pelindaba by road, arriving on 14 January 2012.

- **Nuclear Vessel Licence NVL – 10 issued to Necsa for the non-nuclear powered cargo vessel Ocean Bird**

  In December 2008 the South African cabinet approved that the SAFARI-1 spent nuclear fuel originating from the United States of America (USA), be repatriated. To this end, Necsa and the South African Department of Energy have engaged with the USA Department of Energy to arrange for said repatriation. The repatriation of the spent fuel entailed transport by sea, from the South African port of Richards Bay to the port of Charleston in the USA. This action required that a nuclear vessel licence be issued by the NNR.

  Necsa applied for a nuclear vessel licence for the intended transport actions in April 2011. Following review of Necsa's submitted safety documentation, the NNR issued Nuclear Vessel Licence No. NVL-10 for the proposed actions on 14 July 2011.

- **Issue of Certificate of Exemption COE-08**

  As part of the repatriation of USA origin spent fuel from Necsa to the United States of America, Necsa has applied for exemption to apply for a vessel licence to bring the two empty spent fuel transport casks in ISO containers as well as the ISO containers containing the supporting equipment and tools needed to load the spent fuel transport casks, into a South African harbour. These casks and equipment are only contaminated to levels that allow an exemption to be issued to Necsa for bringing these ISO containers into the harbour and transport it to Necsa. The Certificate of Exemption COE-08 was issued to Necsa to bring this equipment into South Africa.

- **Variation of NIL11 for the Area 14 Waste Management Complex**

  Following the approval of the transport to and disposal of Low Level Waste (LLW) originating from the Necsa Pelindaba site at Vaalputs, the NNR varied the nuclear installation licence for the Area 14 Waste Management Complex, to make provision for the transport of said waste from the Area 14 Waste Management Complex to Vaalputs. Nuclear Installation Licence NIL 11 (Variation 1) was issued to Necsa on 18 April 2011.

- **Approval and validation of transport package design**

  In accordance with the provisions of section 7 of the National Nuclear Regulator Act, Act 47 of 1999, the NNR acts as the competent authority in connection with the International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Material. In line with this mandate, the NNR, during the reporting period, reviewed the package design approval certificates, with a view to recertifying the following transport containers used by Necsa:

Certificate number	Transport package name	Expiry date	Comment/ reason for review
ZA/ NNR/9225/ B(U)F-96	NAC-LWT Transport Cask	28 Feb 2015	Part of repatriation of USA origin spent fuel

- **Re-evaluation of nuclear safety at SAFARI-1 following Fukushima accident**

  Following the Fukushima nuclear accident in Japan, in March 2011, Necsa was directed to perform a safety reassessment of SAFARI-1 Research Reactor with respect to external events, both concerning beyond design basis and risk analysis, taking into consideration lessons learned from the Fukushima accident.

  The NNR required that the reassessment report include, among others, measures and/or potential design features to address and/or mitigate potential vulner-

abilities in the design and beyond-design basis of nuclear installations.

The NNR received a report from Necsa on 30 November 2011and finalised its review of the report in March 2012.

In general the safety reassessment performed by Necsa on the SAFARI-1 facilities, addresses in broad aspects the objective as set out by the directive.

A number of improvement actions and/or recommendations have been identified relating to plant modifications, severe accident management procedures and suitability and compatibility of emergency equipment without Necsa committing to the implementation thereof. Necsa has been instructed to commit to a list of improvement actions to be implemented in the short, medium and long-term.

- **Repatriation of US origin spent fuel from Necsa to the United States of America**
  As part of the international drive to reduce highly enriched uranium (HEU) owned by non-nuclear state entities, the US Department of Energy has embarked on a project to repatriate the spent fuel elements originating from the United States of America. As part of this drive, the US Department of Energy has negotiated with the South African government and Necsa to also repatriate US origin spent fuel elements stored on the Necsa Pelindaba site to the United States of America.

  In December 2008 the South African Cabinet approved that the SAFARI-1 spent nuclear fuel originating from the United States of America (USA), be repatriated. To this end, Necsa and the South African Department of Energy have engaged with the US Department of Energy to arrange for said repatriation.

  The NNR, during the reporting period, reviewed and approved all the safety documentation related to the project. The repatriation project commenced in July 2011 and the NNR received confirmation in August 2011 that the material had arrived safely in the USA.

- **ELPROD safety assessment report**
  ELPROD is the facility where fuel assemblies for the SAFARI-1 Research Reactor and target plates for irradiation in SAFARI-1 are assembled and stored prior to it being transferred to be used and irradiated in SAFARI-1. Necsa had previously submitted a safety assessment report for the ELPROD facility. The NNR had previously completed its review of the submitted documentation and in August 2011, sent comments to Necsa. The NNR comments highlighted that the NNR was not satisfied with the safety arguments presented and that the document needed to be updated and resubmitted for NNR review. Necsa revised the safety assessment report and resubmitted to the NNR on 31 October 2011. The safety analysis report is currently under review by the NNR.

- **SAFARI-1 Gamma Flux Monitoring System (GFMS) replacement**
  At the SAFARI-1 Research Reactor, the existing Gamma Flux Monitoring System (GFMS) has been in operation since 1973 and is now reaching the end of its life. Essential components are ageing and are proving difficult to maintain, as the manufacturing technology is considerdobsolete. In order to maintain reliable and safe operation of the reactor, a suitable replacement for the GFMS must be procured by Necsa. Necsa, in the previous reporting period, submitted a licensing strategy, safety case specification and licensing action plan for the GFMS Replacement Project. The NNR completed its review of the submitted safety documentation and provided comments to Necsa.

6.6.4 Transport safety

The conditions of nuclear authorisation require that transportation of nuclear and radioactive material or any equipment or objects contaminated with radioactive material, must be carried out in compliance with the relevant provisions of the International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Material, Safety Requirements No. TS-R-1.

Table 3: Pelstore radioactive waste containers received during 2011/2012 financial year

Waste type	Waste container	Q1	Q2	Q3	Q4	Total
Medical waste	100ℓ	0	0	0	0	0
Medical waste	160ℓ	1	0	1	0	2
Solidified waste	100ℓ	80	360	0	20	460
Safeguards enriched	200ℓ	0	0	0	0	0
Compressible waste	160ℓ	372	198	153	273	996
Non-compressible waste	160ℓ	0	0	0	0	0
Non-compressible waste	100ℓ	0	0	0	0	0
Non-compressible waste	210ℓ	22	4	24	72	122
Concrete drums	4 tonnes	0	5	40	37	82
Concrete drums	3 tonnes	0	0	160	0	160
Total		**475**	**567**	**378**	**402**	**1822**

Transport actions undertaken during the reporting period included the following:

- Transport of low and intermediate level radioactive waste from Necsa to Vaalputs;
- Transport of calibration sources between Necsa's Vaalputs and Pelindaba sites;
- Transport of radioactive sources from external waste generators;
- Import of LEU fuel plates from CERCA in France; and
- Import of LEU (oxide) from Russia.

There was no safety concern related to the transport of radioactive material during the period under review.

6.6.5 Radioactive waste safety

There were no safety concerns regarding radioactive waste management on the Pelindaba site at Necsa during the period under review.

In accordance with the conditions of licence, Necsa is obliged to:

- Establish and implement arrangements for the minimisation and safe management of radioactive waste on the site, and
- Establish, implement and maintain a radioactive waste management programme for each facility on the site, in order to:
    - Ensure the identification, quantification, characterisation and classification of any radioactive waste generated;
    - Provide for the necessary steps leading to safe clearance, authorised discharge, disposal, reuse or recycling; and
    - Provide for the safe storage of radioactive waste between any waste management processes.

The following are some of the primary principles that apply to the management of solid radioactive waste on the Necsa Pelindaba site:

- Waste management is aimed at optimising the processes from waste generation to waste disposal;
- The responsibility for solid waste management in: the development of facility-specific programmes; application of safety standards; quality assurance; and optimisation and compliance with waste acceptance requirements, is vested with the waste generator.

All waste generated and processed on the Necsa site shall, after completion of the relevant predisposal activities, be channelled via a single gate-keeping entity (the Nuclear Liabilities

Management Department (NLM)) for further predisposal activities (as applicable), followed by either long-term storage or disposal.

The waste generator is responsible for waste up to the point at which it has been formally transferred and accepted by NLM.

6.6.5.1 Waste stored at Necsa's Pelstore facility

Pelstore is the centralised storage facility for radioactive waste on the Pelindaba site and is housed in a decommissioned building that is re-used for this purpose. During the 2011/2012 financial year, Pelstore received a total of 1 822 radioactive waste containers as detailed in table 3 on the previous page.

The storage of radioactive waste on the Pelindaba site was generally found to be in compliance to the conditions of authorisation.

6.6.6 Environmental Protection

Necsa is required to develop, implement and maintain an environmental monitoring programme to ensure that discharges from its facilities do not impact the environment negatively. In compliance with this requirement, Necsa collects samples from various media in the environment. These samples are analysed and the results are submitted to the NNR quarterly. The NNR has reviewed the quarterly radiological environmental monitoring reports from Necsa and there were no concerns regarding safety of the environment around Pelindaba during the calendar year 2011.

6.6.7 Nuclear Emergency Planning and Preparedness

In accordance with sec 38 (f) of the NNRA, where the possibility exists for a nuclear accident which may affect the public, the NNR must ensure that the holder of a nuclear authorisation has established an effective emergency plan for protection of persons.

Two emergency drills were conducted by Necsa during the reporting period. The first drill was held on 18 April 2011. During this desktop drill, emergency functionaries at Madibeng Disaster Management Centre were trained on their roles in case of an emergency at Necsa. The drill was successful, as the functionaries participated well and were observed to begin to understand their roles.

The second drill was held on 17 June 2011. During this drill Necsa tested communication between the functionaries and mustering of buildings. Communication was rated as acceptable. There were however, instances where some basics of mustering were ignored in some buildings. The NNR pointed these out to Necsa and these will be addressed in the corrective actions. Nuclear Technology and Waste Products NTWP will follow these up during inspections.

Two NEPC meetings were held during the period under review. The NNR required Necsa to accelerate the signing of the Section 38 agreement, as well as the outstanding Madibeng procedures.

The NNR conducted a nuclear regulatory emergency exercise on October 2011. The overall response of Necsa and the intervening organisations showed that the nuclear emergency plan was viable; however areas for improvement have been identified.

In order to ensure effectiveness of Necsa's preparedness and response arrangements with respect to nuclear emergencies, the NNR performed audits and arranged an emergency exercise where the response to a given scenario is tested. The NNR invited a number of actively-involved stakeholders to participate as observers.

Following the exercise, Necsa was required to ensure that appropriate corrective actions were implemented. The NNR continues to monitor the implementation of corrective actions by Necsa.

6.6.8 Physical Security

Necsa is required to put in place physical security measures to prevent, as far as reasonably possible, unauthorised access to sites, or diversion, theft or removal of radioactive material that does not meet the requirements of clearance.

The NNR provided technical support for nuclear security oversight during the repatriation of HEU from South Africa to the USA.

There were no safety concerns regarding physical security at Necsa during the period under review.

6.6.9 Safety of Sealed Radioactive Sources

In accordance with the conditions of licence, Necsa was required to maintain a register of all radioactive sources on the site. The radioactive source register is submitted to the NNR annually at the end of the calendar year and Necsa provides a status report twice a year. There were no safety concerns regarding sealed radioactive sources at Pelindaba during the period under review.

6.6.10 Nuclear Incidents/Accidents Reported

There were 43 events reported at the Pelindaba site during the period under review. The majority of the events reported were rated zero on the International Nuclear Events Scale (INES) and a few were rated one.

6.6.11 Regulatory Compliance Inspections

In order to verify the degree of compliance with the condition of authorisation, the NNR undertakes independent inspections and audits of Necsa facilities. For the period under review, a total of 76 inspections were planned. The NNR conducted 76 planned compliance inspections during the 2011/2012 financial year at the Pelindaba and Vaalputs sites respectively. The majority of the inspections conducted showed compliance with the NNR's regulatory requirements and regulations.

In addition, the NNR conducted nine unplanned inspections at the Necsa facilities. These are outlined below:

NO.	DESCRIPTION
1.	Necsa was preparing to repatriate SAFARI-1 spent fuel of US origin to the USA. In this preparation, one of the tasks was to select and evaluate the route that would be used for taking the spent fuel to the harbour. The NNR was part of the appropriate route assessment and the route was found to be acceptable. The inspection relating to this issue also included the transfer of spent fuel from Thabana Pipe store to SAFARI-1. Necsa complied with the NNR requirements during the transfer.
2.	Necsa has been granted an authorisation to transport to and dispose of radioactive waste at Vaalputs. There are requirements that must be satisfied prior to the shipment of this radioactive material during the trip and on arrival at Vaalputs. There was a non-compliance identified relating to the transportation by the drivers and the matter has been discussed with Necsa.
3.	NTWP conducted an inspection at the aerodynamic separation process ASDPL facility. The facility had been tested after its construction, and the NTWP had to verify that the plant is well constructed prior to giving Necsa permission to commence with cold-commissioning of the ASPDL. The NNR was satisfied with the results of the inspection.
4.	Necsa had requested TUV to do an evaluation/inspection of the Primary System Basket type strainer after rework/repair. Nuclear technology and waste products (NTWP) sent an inspector to observe the TUV third party inspection in order to assess the status of the rework activities performed to ensure the quality, capability and functionality of the strainer. All rework done was found to be within specification and acceptable.

NO.	DESCRIPTION
5.	During the repatriation of spent fuel, two NNR compliance assurance inspections were conducted to check compliance with regard to: *Training of Necsa personnel on loading spent fuel assemblies into spent fuel casks and loading spent fuel assemblies into the transport cask.* There were a few non-conformances raised during the inspection. The NNR informed Necsa about those non-conformances and Necsa implemented corrective actions. *Transportation of the spent fuel casks from Necsa to Richards Bay Harbour.* The NNR conducted a pre-shipment inspection of the trucks, en-route transport activities and loading of packages onto the vessel. Necsa complied with all NNR requirements in this regard.
8.	Necsa is in the process of conducting in service inspections (ISI) in the core underneath the grid plate. A decision to manufacture a new grid plate for SAFARI-1 was taken in order to have a spare grid should the current grid plate break during the inspection. The NNR requires Necsa to follow approved processes for the regular, periodic and systematic examination, inspection, maintenance and testing of all plants, systems, structures and components. Due to a number of previous unsuccessful attempts in manufacturing the grid plate, the NNR decided that Necsa's proposed dummy grid plate manufacturing process should be part of the qualification process and hold points were confirmed. The NNR had to observe the grid plate manufacturing activities at various stages and Necsa complied with NNR requirements for manufacturing of the dummy grid plate.
9.	Necsa was going to receive target plates imported from France. The NNR had to ensure that conditions laid down for receipt of the target plates were complied with and that was found to be the case.

NNR conducted all of the three planned audits during the reporting period.

6.6.12 Regulatory Warnings or Directives to Stop Work

The following table details directives issued to Necsa by the NNR over the reporting period:

NO.	DESCRIPTION
1.	A directive regarding medical surveillance records. The directive issued required Necsa to confirm that the alleged ex-Necsa employees that forwarded a complaint to the Public Protector's office, were Necsa employees and most importantly, contracted occupational diseases due to exposure to radiation while in the employ of Necsa. The directive further required Necsa to provide records associated with this matter to the NNR. The matter is still open as additional information required by Necsa, had to be provided.
2.	A directive requiring strengthening of security measures in light of increased security concerns, related to COP-17, for facilities at both the Pelindaba site and Vaalputs site. The matter has been closed as the COP-17 activities have come and gone.
3.	A directive regarding the radioactive waste package received at Vaalputs with a surface dose rate above 2mSv/h. The issued directive required Vaalputs to return the radioactive waste package to Koeberg Nuclear Power Station.
4.	A directive issued to Necsa to perform a safety reassessment of SAFARI-1 Research Reactor with respect to external events, both in the design basis and risk analysis, taking into consideration lessons learned from the TEPCO Fukushima Daichii nuclear accident. The modifications, measures and technical features required to improve safety of the SAFARI-1 Research Reactor, had to be identified based on the reassessment.

6.6.13 Regulatory Independent Verification of Radiological Environmental Analysis

The NNR has instituted an environmental verification plan at Necsa in order to detect any anomalies associated with the discharge from the Necsa site. During the period under review, a total of 78 samples were collected from the following sample media:

- Milk from cows in the surrounding area;
- Water from surrounding streams, i.e. Crocodile River and Hartbeespoort Dam; and
- Soil and sediment from Necsa and the surrounding areas.

The NNR has also deployed 10 environmental TLDs around Necsa. There were no anomalies detected during the reporting period.

6.6.14 Appeal to the Chief Executive Officer

There were no appeals lodged to the CEO during the reporting period.

6.7 Waste Disposal – South African Nuclear Energy Corporation Vaalputs Radioactive Waste Disposal Facility

Concrete drums containing radioactive waste

Background

Vaalputs, the national radioactive waste disposal facility, is situated in the Northern Cape Province, approximately 90 km south-east of Springbok, which is the closest town, and 200 km from the Namibian border. It is located on the western edge of the Bushmanland Plateau, and extends some way into the Kamiesberg, which forms part of the Namaqualand rocky hills. The farm, Vaalputs, covers an area of approximately 10 000ha, and t`he disposal site is situated in the western half and is 99.54ha (900m x 1 106m) in extent, including a 200m exclusion zone along the perimeter, where waste disposal is not permitted. Vaalputs went through a detailed screening, selection and characterisation process and a nuclear installation licence for the disposal of radioactive waste at Vaalputs was granted in February 1990 (Nuclear Installation Licence NL-28).

6.7.1 Occupational Exposure to Radiation

The worker doses at Vaalputs over the period under review were within regulatory limits.

Radiation exposure of personnel working at Vaalputs is subject to control by the operational radiation protection programme. This programme ensures that control within the annual individual dose limit is achieved. In addition, the programme also serves to ensure that all doses are kept as low as reasonably achievable (ALARA). Vaalputs demonstrated control over occupational exposure of the workers, in line with the NNR requirements.

The average effective radiation dose per occupationally exposed worker for the calendar year 2011 was 0,42mSv. The maximum cumulative dose accrued for an individual in the calendar year was 1.56mSv. The figure below shows the range of worker doses for the last six years.

6.7.2 Public Exposure to Radiation

There was no safety concern regarding public exposure to radiation. In accordance with the conditions of licence and the Regulations on Safety Standards and Regulatory Practices (RSRP), published as Regulation No. R388 dated 28 April 2006, the public doses resulting from effluent discharges from the Vaalputs must comply with the dose constraint of 0.25mSva-1. The environmental surveillance programme for Vaalputs has shown no measurable radiological impact on the public living around Vaalputs.

6.7.3 Nuclear Safety

Variation of NIL28 for the Vaalputs radioactive waste disposal facility

Following the approval of the transport of radioactive waste drums to and disposal at Vaalputs of Low Level Waste (LLW) originating from the Necsa Pelindaba site, the NNR varied the nuclear installation licence for the Vaalputs radioactive waste disposal facility to make provision for the receipt and disposal of said waste at Vaalputs. Nuclear Installation Licence NIL 28 (Variation 1) was issued to Necsa on 18 April 2011.

NNR safety case review discussion

Fig 1: Occupational exposure at Vaalputs (2007 to 2011)

6.7.4 Transport Safety

Transport of waste to the Vaalputs site is the responsibility of the waste generator and is regulated by the NNR. The Vaalputs waste acceptance criteria requires that such transport be performed in compliance with the relevant provisions of the IAEA regulations for the safe transport of radioactive material. There were no safety concerns regarding the transport safety at Vaalputs during the period under review.

6.7.5 Radioactive Waste Safety

During the reporting period, 27 shipments of low level radioactive waste were received at Vaalputs, consisting of nine shipments from Necsa and eighteen shipments from KNPS. Pre-shipment inspections were performed by Vaalputs personnel on waste packages scheduled for shipment to Vaalputs, before shipment approval was considered, to ensure that only physically sound waste containers arrive at Vaalputs.

Vaalputs received 1 847 (100 litre) metal drums from Pelindaba and 599 metal drums and 64 concrete drums from KNPS for disposal during the calendar year 2011.

The receipt and disposal of radioactive waste at Vaalputs were in compliance with the conditions of authorisation except for two drums from KNPS, and Nuclear events were registered in both cases. The deviations were as follows:

i. The lid of a metal radioactive waste package No. 15286 came off before being off-loaded into a trench.
ii. Concrete waste package No. 5551C1/4246 was delivered to Vaalputs with an external dose rate that exceeded the limit of 2mSv/h.

The number and types of waste packages disposed of during the period under review, are summarised in table1 below.

The Vaalputs nuclide inventory, including the number of waste packages in each trench, as on 31 December 2011, is summarised in table 2 below.

6.7.6 Environmental Protection

There were no concerns regarding the safety of the environment at Vaalputs during the period under review.

Table 1: Packages disposed at Vaalputs during the reporting period

Waste Generator	Type of waste packages			Waste Generator	Type of waste packages		
	Concrete metal	Metal	Other packages	NECSA	Concrete metal	Metal	Other packages
	64	599	0		0	1847	0
Koeberg	64	599	0		0	1847	0

Table 2: Vaalputs nuclide inventory

Trench	Number of waste packages	Total activity received and decayed up to 31 December 2011	
		Total activity received to date (GBQ)	Total activity corrected for decay (GBQ)
A01	11740	1.918E+05	5.850E04
A02	840	4.070E+02	8.534E01
A03	1639	8.534E+02	4.887E02
A04	1079	7.117E+02	6.064E02
B01	3177	1.019E+05	2.525E04
B02	400	1.866E+04	1.435E04
B03	233	1.324E+04	1.203E04
B04	23	7.142E+03	6.621E03
Total	**19131**	**3.349E05**	**1.179E05**

6.7.7 Nuclear Emergency Planning and Preparedness

There were no safety concerns regarding the emergency planning and preparedness at Vaalputs during the period under review.

6.7.8 Physical Security

There were no safety concerns relating to physical security at Vaalputs during the period under review.

6.7.9 Safety of Sealed Radioactive Sources

The control of radioactive sources is managed in accordance with the stipulations of the Necsa PBL document "Control of Radioactive Sources". Necsa is required to maintain a source register of all sources onsite. There were no irregularities relating to sealed radioactive sources at Vaalputs during the period under review.

6.7.10 Nuclear Incidents/Accidents Reported

Although there were seven minor events reported by Necsa, there was no event representing a nuclear accident or nuclear incident as defined in the SSRP.

6.7.11 Regulatory Compliance Inspections

NNR inspections undertaken at Vaalputs during the period under review indicated a large degree of compliance with the Vaalputs licence conditions. However, during the audit conducted on the facility by the NNR, a few shortcomings were raised.

6.7.12 Regulatory Warnings or Directives to Stop Work

The NNR issued one regulatory directive for Vaalputs during the period under review.

6.7.13 Appeals to the Chief Executive Officer

No appeals were lodged during the period under review.

6.8 Naturally Occurring Radioactive Materials (NORM)

Regulating mining activities

Natural occurring radionuclides are present in all minerals and raw materials of natural origin, the most important of which, for the purposes of radiation protection are the radionuclides in the U238 and Th232 decay series and K40. These materials are commonly referred to as Naturally Occurring Radioactive Materials (NORM). In some materials the levels of NORM are significantly higher, to the extent that regulatory control may be required for radiation protection purposes. In terms of the National Nuclear Regulator Act (Act no. 47 of 1999), the NNR is responsible for exercising regulatory control over mining and mineral processing facilities handling NORM. Mining and mineral processing facilities which handle NORM require authorisation in terms of this Act. In terms of section 22 (1) of the NNR Act, such facilities are authorised by means of a certificate of registration (COR). The COR is issued with certain conditions of authorisation which all holders are required to comply with. A system of compliance assurance exercises (inspections, audits and investigation actions) are conducted at these various holders to ensure compliance to the conditions of authorisation and the applicable Safety Standards and Regulatory Practises R388.

The NNR currently grants nuclear authorisations for the following categories:

- Mining and mineral processing facilities;
- Scrap smelters;
- Fertiliser manufacturers;
- Scrap processors;
- Small users, and
- Service providers.

The activities at these facilities include actions such as:

- Mining and processing of gold, copper, uranium, heavy minerals and phosphate rock;
- Recycling of scrap material (i.e. ferrous and non-ferrous metal, plastic, stainless steel, etc.) that is contaminated by NORM;
- Laboratories conducting tests of small quantities of NORM samples for verification of proposed and existing actions, including samples from prospecting activities, and
- Some service providers are authorised for clean-up of radiologically contaminated sites.

Brief descriptions of the various processes at the NORM processing facilities regulated by the NNR:

- **Mining and mineral processing facilities**
  The activities at these facilities include mining and processing of gold, copper, uranium, heavy minerals and phosphate rock. The process for producing these ores can be divided into six main phases that include among others: finding the ore body; creating access to the ore body; breaking the ore body or removing the ore by mining; transporting the broken/mined material from the mining face to the surface plants for treatment; processing (this process occurs in multi-stage crushing and milling circuits), and refining. In the case of heavy minerals, the separation of the mined ore body at the treatment plant is through electromagnetic processes and no chemicals are applied on the mined ore.

- **Fertiliser manufacturing**
  Most of the fertiliser manufacturing industries authorised by the NNR use sulphuric acid combined with phosphate rock as raw material to produce phosphoric acid and finally, fertilisers. The phosphate industry produces fertiliser, animal feed, and phosphoric acid using phosphate rock, which contains Naturally Occurring Radioactive Materials or NORM. Before phosphate ore is turned into fertiliser or other products, it is transformed into either phosphoric acid (through the wet process), or elemental phosphorus (through the thermal process). A by-product, calcium sulphate (gypsum) is also produced. This gypsum is called phosphogypsum. There are approximately five tonnes of phosphogypsum produced for every ton of phosphoric acid product produced. During the production of the above products, radioactive waste is produced in the form of liquid (gypsum slurry) and solid wastes (scrap metal and filter cloths). Gypsum is normally stored on land, in waste heaps at a secluded area, or discharged off to the sea, whereas the scrap is either stored onsite or released to be used for other purposes. Seventy five per cent of the phosphate rock comes from Foskor Limited: Phalaborwa Division in the Limpopo Province and the rest (known as Togo rock, i.e. sedimentary phosphate rock with high 238U content) is imported from North African countries.

Regulating NORM

- **Scrap processors**
  A typical recycling process will start with the collection of plastic, ferrous and non-ferrous scrap metal, which is transported to an area under the scope of regulation. This scrap metal is collected underground and has been found to have elevated levels of radiation. Scrap metal

collected, is recorded, segregated and will be either released to the public or released to authorised scrap smelters according to the approved NNR procedure for radioactive waste management for smelting and conversion to other products.

- **Scrap smelters**
  The process for melting scrap metal, involves superheating a quantity of metal to high temperatures in a metal heating furnace until it is molten. A scrap melt is formed by placing the superheated metal in contact with a quantity of scrap metal, and submerging the scrap metal therein, removing impurities from said scrap melt. The molten metal is now either exported/transported to various industries, like foundries, for use in other products, etc.

- **Small users and service providers**
  These are laboratories or pilot plants for the testing of small quantities of NORM samples to verify the viability of the proposed mining projects. Here, samples are received from clients with detailed instructions. These samples are then reduced to a fine powder by crushing and milling, and the radiological content of the samples is determined through chemical analysis.

- **Refurbishers**
  Some of the materials collected from underground mining environments, such as pumps, electrical fans, etc., need to be repaired or refurbished for re-use. It has also been found that most of them when screened have elevated levels of radiation, requiring that they be handled by competent radiation protection personnel. Once removed from underground and screened, they are sent to authorised engineering firms for refurbishment. The equipment may be sandblasted to remove radioactive scales before the refurbishing process.

- **Remediation / clean-up of radiologically contaminated sites**
  The remediation process involves the removal of radioactive material and objects within authorised actions or contaminated sites outside the authorised actions. The service provider appointed for this purpose, as a COR holder, will submit for approval the appropriate documentation as required by the NNR, detailing a step by step approach and methodology to be used in the remediation. Once approved, remediation occurs, and the NNR will conduct its independent verification survey to finally determine the condition post-remediation, of the area or site for use.

6.8.1 Occupational Exposure to Radiation

NNR safety case review discussion

The primary radiation exposure pathway to workers in the underground mining environment is via the inhalation of particular radon progeny. The regulatory limits that are applicable for all workers classified as occupational exposed personnel are:

- An (average) effective dose of 20mSv per year averaged over five consecutive years, and
- A (maximum) effective dose of 50mSv in any single year.

Based on these limits, the NNR requires the holders to demonstrate that the average effective dose of 20mSv per year averaged over five consecutive years is not exceeded. This requires the holder to have proper dose records of all occupational exposed personnel for a rolling five years as determined by the SSRP R388.

The NNR continued to focus much of its regulatory efforts on those mines where the potential existed for workers to be exposed to radiation levels in excess of the annual dose limit. During the period under review, no workers exceeded the annual dose limit.

6.8.1.2 Operational Special Case Mines (SCM)

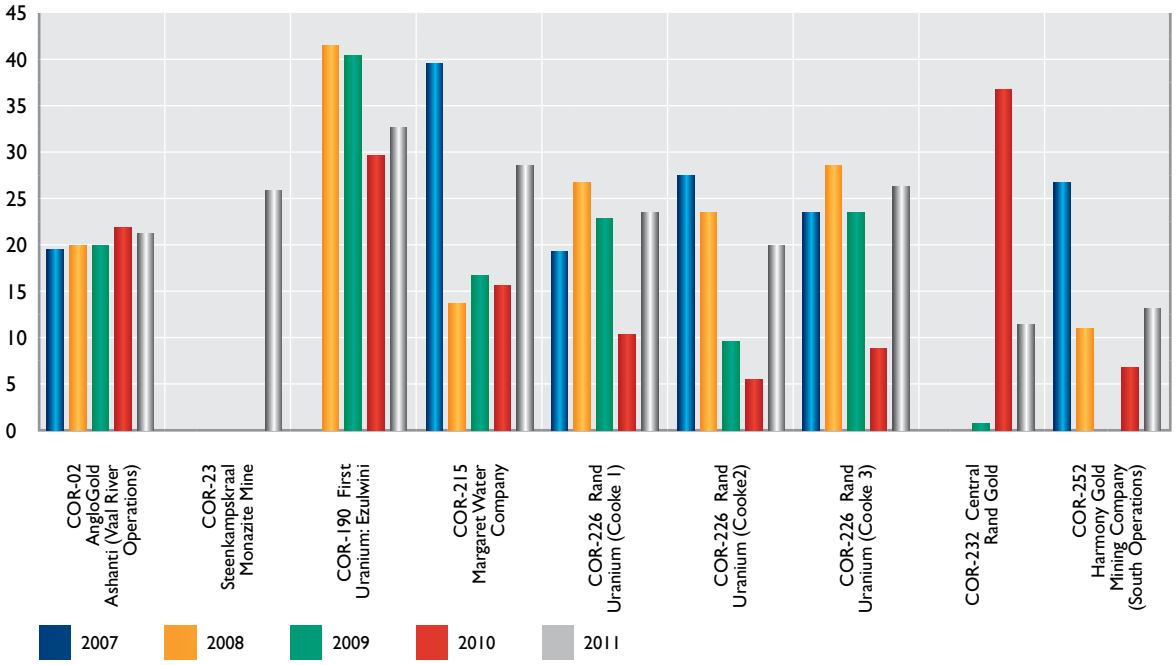


Fig 1: Summary maximum accumulated occupational dose (Special Case Mines)

Table 1: Summary of occupational dose for non-Special Case Mines which includes all authorised NORM users

No. of workers	Total effective dose (msv/a)		
	0 to 10	10 to 20	>20
96413	95138	1275	0

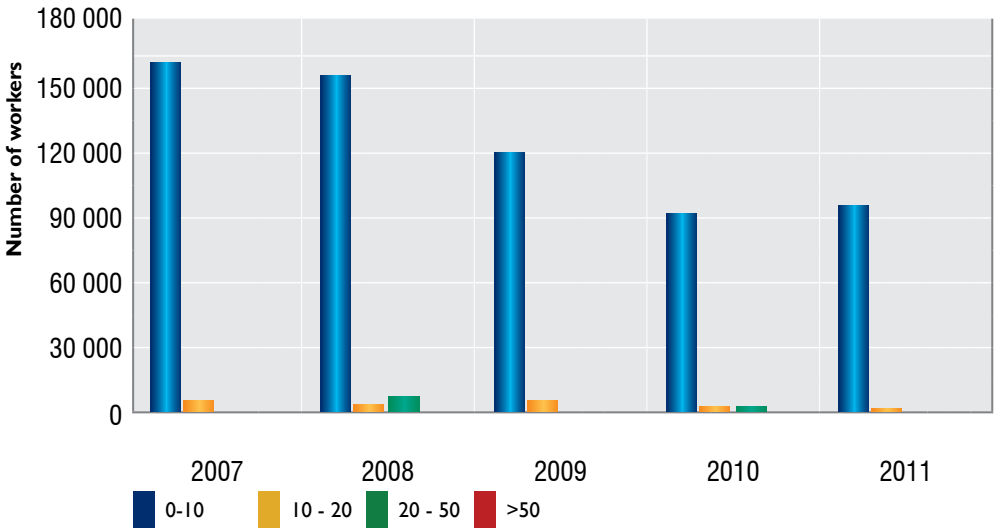


Fig 2: Summary of occupational dose for NORM over period 2007 to 2011

6.8.1.1 Special Case Mines (SCM)

For a mine to be classified as special case by the NNR, the potential of the monthly dose rate must be 1.7mSv and above, or the projected annual dose of 20mSv should be exceeded. During the period under review the NNR noted a slight improvement in observed worker doses which can be attributed to the compliance assurance measures enforced by the NNR on the holders.

6.8.2 Public Exposure to Radiation

In accordance with the Regulations on Safety Standards and Regulatory Practices, Regulation No. R388, dated 28 April 2006 (RSRP), the doses for members of the public must comply with the action specific dose constraint and a limit of 1mSva^{-1} from all authorised actions. The NNR further requires the holders to submit the Public Safety Assessments (PSAs) to ensure that the authorised actions do not pose any undue health risks to members of the public. These documents have been reviewed by the NNR. The projected public exposures from authorised actions were all within the public dose limit.

6.8.3 Transport Safety

There were no safety concerns related to transport during the period under review. The transportation of NORM and NORM contaminated scrap was carried out in accordance with the requirements of the NNR. Routine transport of low specific activity (LSA-1) scrap materials takes place on a daily basis between authorised facilities.

6.8.4 Radioactive Waste Safety

There were no safety concerns related to radioactive waste safety during the period under review.

Authorisation holders are required to manage their radioactive waste and associated waste products. Accordingly, section 1.5 of the COR requires that a waste management procedure be submitted to demonstrate compliance with NNR requirements.

The main aspects of a typical radioactive waste management procedure include:

- Identification of radioactive waste and its sources;
- Segregation of radioactive waste into process and non-process waste;
- Categorisation of process waste into homogeneous and non-homogeneous waste;
- Radioactive waste management options;
- Record keeping and reporting, and
- Quality assurance.

Routine and annual waste management reports were submitted to the NNR, summarising and interpreting the above programme and demonstrating compliance with the NNR requirements.

6.8.5 Nuclear Emergency Planning and Preparedness

The NNR requires that an emergency and preparedness plan be established to make provision for any occurrence involving radioactive material which has the potential to give rise to unplanned exposure to radiation in excess of the respective annual dose limits for workers, visitors to the site, or members of the public. The scope and application of this procedure was mainly limited to the transportation of NORM as in the case of NUFCOR. There were no safety concerns related to nuclear emergency planning and preparedness during the period under review.

6.8.6 Physical Security

As part of the conditions of a nuclear authorisation, the holders of a nuclear authorisation are required to establish, implement and maintain a physical security system that was approved by the NNR. Such a system would prevent, as far as reasonably possible, unauthorised access to areas containing radioactive material and would also prevent the unauthorised removal, diversion or theft of such material. In general the holders demonstrated compliance with the physical security requirements.

6.8.7 Safety of Sealed Radioactive Sources

There are no sealed radioactive sources regulated by the NNR at holders of certificates of registration. The safety and regulation of the radioactive sealed sources falls within the jurisdiction of the Directorate Radiation Control under the Department of Health.

6.8.8 Nuclear Incidents/Accidents Reported

There was one incident as defined in the NNR Act, reported during the reporting period.

6.8.9 Regulatory Compliance

In order to verify the degree of compliance with the condition of authorisation, the NNR undertakes independent inspections and audits at authorised facilities.

A total of 212 inspections were conducted during the reporting period. These inspections were conducted to verify the degree of compliance with the various programmes and procedures implemented by the holders and were focused on those mines where worker doses could be exceeded or where uranium and acid plants were being demolished.

NNR inspectors conducting a planned inspection

Holders were required to investigate the reasons for, and implement corrective actions related to all non-compliances identified.

A total of 13 audits were conducted at various mining facilities, to ascertain the degree to which these mines were implementing quality management systems. The audit findings concluded that the mines were deficient in terms of the requirements related to quality management systems.

The mines were required to submit and implement action plans addressing corrective and preventive actions. The NNR will continue to monitor the implementation of the corrective and preventive measures during the next reporting period.

Investigations

During the review period the NNR conducted 20 regulatory investigations and as a result registered 13 Class 1 Occurrences, two Class 2 Occurrences and five Class 3 Occurrences.

6.8.10 Regulatory Warnings and Directives to Stop Work

The following regulatory warnings and directives to stop work were issued to holders of nuclear authorisations:

- On 17 June 2011 the NNR directed Buffelsfontein Gold Mines Limited to:
  - Submit an authorisation change request (ACR) on the scope change by 10 June 2011 following the acquisition of a shaft from another holder;
  - Cease the release of waste rock to crushers until approval was granted by the NNR;
  - Rehabilitate the historical site that was found to be radioactively contaminated;
  - Ensure that the temporary storage facility is fenced off and categorised, commensurate with the potential radiation hazards;
  - Submit a public safety assessment by the end of June 2011; and
  - Ensure that all shafts areas and slimes dams are fenced off.

Outcome

Most aspects of the directive were complied with by the holder, except for the rehabilitation of a historical site that was found to be contaminated. The holder submitted an action plan that will be followed up during the next reporting period.

- On 27 June 2011, the NNR directed GFI Mining South Africa (Pty) Limited (Kloof Operations) to:
  - Stop the disposal of waste material on top of Number 7 Waste Rock Dump and remove all the radioactive materials that were already disposed of;
  - Stop the demolition that was taking place at GFI Kloof 6 shaft;
  - Stop the release of potentially contaminated timber to the members of the public;
  - Submit occurrence reports related to tailings spillage;
  - Update the dose register and submit it to the NNR for approval;
  - Ensure that Occupationally Exposed Persons (OEPs) from underground were not leaving the mine with potentially contaminated Personal Protective Equipment (PPE) to the hostels; and
  - Ensure that there is monitoring in place to quantify exposure levels for workers pumping potentially contaminated water at Shaft 10.

Outcome

The holder has complied with most aspects of the directive except for the Occupationally Exposed Persons OEPs from underground who continue to pose a contamination risk. Change houses have been provided at the hostels.

- At an inspection on 4 July 2011, the NNR identified that crushed waste rock was stockpiled in a public area in Orkney. The holder Buffelsfontein Gold Mine was issued with a directive to cease transportation and stockpiling of crushed waste rock material in the public domain.

Outcome

The holder complied with the directive by ceasing operations and submitted a safety assessment report, including a radio analysis report indicating activity concentration below the regulatory limit.

- In response to a complaint lodged by farmers around the operations of Mine Waste Solutions, the NNR conducted an inspection which revealed that process water that was leaking through the damaged pipes belongs to Buffelsfontein Gold Mine. On 2 September 2011 the holder was issued with a directive to:
  - Cease the pumping of process water through the damaged pipes;
  - Ensure that pipeline infrastructure is properly maintained by 9 September 2011 as the due date for submission of a maintenance programme, and
  - Submit the occurrence reports and close out reports for the occurrences identified.

Outcome

The inspection conducted by the NNR established that the pipes had not been in use.

- During the compliance assurance inspection on 30 June 2011 at Central Rand Gold, it was noted that CRG SA (Pty) Ltd was not complying with all the requirements of the COR-232. As a result, the NNR issued a directive on1 July 2011 to stop all release of waste rock from CRG Operations to O'Connell Mining, until the approval from NNR had been granted.

Outcome

The mine was allowed to commence with operations after the NNR granted the holder conditional approval for waste rock release for construction purposes and other uses which would not result in radon buildup.

- On 20 July 2011 the NNR directed Mine Waste Solutions to:
  - Cease the deposition of slime onto the tailing storage facilities;
  - Ensure that the pipes are maintained and submit the maintenance programme for approval by the NNR prior to restarting of this action; and
  - Submit all the occurrence reports and close out reports for the occurrences identified.

Outcome

The holder complied with the NNR directive and was allowed to commence with the operations, following verification of the corrective actions taken.

- An investigation was undertaken at Scaw Metal by the NNR when contaminated scrap metal triggered the alarm. This contaminated metal was not accepted by Scaw. The origin of the material was traced back to Microzone. The NNR directed Microzone on 10 August 2011 to submit an occurrence and close out report by 15 August 2011.

Outcome
The directive was complied with and the occurrence was closed on 17 October 2011.

- On 15 August 2011, the NNR directed Linbeck Metal Trading to cease scrap handling operations, as the holder was not available for inspections and had on numerous occasions, not paid authorisation fees.

Outcome
Subsequently the directive was lifted and the NNR has granted the holder a requested extension of 11 months from the date of the directive to compile a safety assessment report, pay the fees and surrender the COR. A follow-up will be done in the next reporting period.

- On 26 September 2011, the NNR directed GFI Mining (Kloof Operations) to collect the contaminated pipes at UCG, conduct a survey and rehabilitate all areas affected by the unauthorised release of contaminated pipes.

Outcome
A progress report has been submitted and the NNR will verify the corrective action taken during the next inspection.

6.8.11 Appeals to the Chief Executive Officer (CEO)

The Federation for Sustainable Environment (FSE) lodged an appeal to the NNR Board in terms of section 44 of the NNR Act against the decision of the NNR CEO to allow MWS to resume operations. The Board upheld the decision of the NNR CEO and the matter was escalated to the Minister of Energy in terms of section 45 of the NNR Act.

6.9 Special Projects

During the period under review, the team focused primarily on regulatory research and development and on the nuclear safety stress tests following the Fukushima Daiichi nuclear accident in Japan.

The NNR's regulatory research initiatives currently focus on the following key areas:

- Determination of appropriate levels of financial provisioning for nuclear damage from nuclear installations;
- Review of current uses of depleted uranium in South Africa and determination of actions that require authorisation;
- Investigation of facilities with a potential for NORM associated exposures, especially the oil and gas industry actions to be authorised;
- Development and implementation of an independent verification process and procedure; and
- Development of a database with the current radiological impacts in the Wonderfonteinspruit Catchment Area (WCA) and a methodology to prioritise and characterise sites.

6.9.1 Highlights for the Reporting Period

- The development of the following position papers:
  - o A regulatory framework for manufacturing long-lead items;
  - o A regulatory policy and framework for the radiological protection of the environment; and
  - o Intervention for indoor radon.
- Finalising the NNR's regulatory philosophy document which provides information on how the NNR conducts regulatory oversight over the nuclear industry.

6.9.2 Report on the Implications of the Fukushima Daiichi Nuclear Accident on Koeberg Nuclear Power Station and the Safari -1 Research Reactor and on the Nuclear Regulatory Framework in South Africa

Following the nuclear accident at the Fukushima Daiichi nuclear power plant in Japan, the National Nuclear Regulator of South Africa (NNR) directed nuclear authorisation holders Eskom and Necsa to perform a safety reassessment of the Koeberg and SAFARI-1 nuclear facilities along similar lines to the 'stress tests' conducted internationally.

The aims of the safety reassessments were to:

(i) Identify vulnerabilities in the design basis of the facilities.
(ii) Evaluate the safety margins for beyond design events.
(iii) Identify necessary modifications, measures and technical features to be implemented, where needed, to strengthen defence-in-depth and improve safety of operating facilities.

It was noted that Eskom responded to industry initiatives prior to the NNR directive, which resulted in early short-term improvements.

The NNR carries out effective regulatory control by developing and implementing regulatory standards and practices that are comparable to internationally accepted standards and practices. The regulatory approach of the NNR considers both deterministic and probabilistic principles for the regulatory control and the assessment and verification of safety of the nuclear installations. With regard to the national nuclear regulatory framework, the NNR has consistently imposed deterministic and probabilistic principles as an obligation on the nuclear industry in South Africa. The NNR is regarded as a pioneer in this approach which, following the Fukushima accident, is attracting more attention world-wide. The NNR's regulatory approach has also had significant impact on the design and operation of the Koeberg nuclear power plant, resulting in modifications and accident procedures which are beyond what is typically required internationally.

The safety reassessments conducted, have identified certain improvements to the plants, as well as to the regulatory framework to further improve safety, and inform additional analyses that need to be conducted to confirm the results of the reassessment. Eskom and Necsa are required to implement these in accordance with the timelines agreed with the NNR.

It is further recommended that South Africa should perform a full self-assessment of all emergency planning and response infrastructures using the IAEA Emergency Preparedness Review (EPREV) and Self-Assessment guidelines.

In response to the directive from the NNR in May 2011, Eskom and Necsa submitted the respective safety reassessment reports in December 2011. The NNR completed a review of the reports submitted and noted the following high-level conclusions.

- The assessments conducted conform to the NNR directive and are in accordance with international practice.
- The nuclear installations are adequately designed, maintained and operated to withstand all external events considered in the original design basis.
- There were no findings to warrant curtailing operations or to challenge the design margins of these facilities.
- The safety reassessments identified a number of potential improvements to further reduce risk beyond the design requirements.
- As anticipated, given the short timescale for the reassessment, it is recommended that follow-up studies need to be performed to confirm certain conclusions and consolidate the formal licensing documentation.
- The NNR has identified five areas for improvement of the regulatory standards and regulatory practices. These areas for improvement will be addressed as part of the current review in the Regulatory Framework Project.

6.10 Stakeholder Relations

The NNR recognises that a key deliverable for building stakeholder trust and confidence in its regulatory activities is to continually strive to enhance its stakeholder engagement and information efforts both nationally and internationally.

All our interactions with our stakeholders during the period under review were guided by the following principles:

- Communicating in an ethical and responsible manner with all stakeholders.
- Information provided must be balanced and as open as company confidentiality permits; always reliable, and as fast as possible. By 'balanced' we mean providing the same information consistently to all the media. By 'openness' we mean that the communication threshold is equally high for both positive and negative matters.
- Information supplied will be factually correct and up to date, in an understandable language and style to ensure informed stakeholder groups.
- Participation and consultation with stakeholders will be ensured by an open, timely and transparent communication process through several and relevant channels.
- Early stakeholder engagement may take different forms, depending on the type of stakeholder, the relationship to the issue, and their potential influence on outcomes.
- Stakeholders will be capacitated to facilitate symmetrical bi-directional communications between themselves and the NNR.
- Communication and engagement programmes will be carried out in an open, transparent, professional and timely manner.

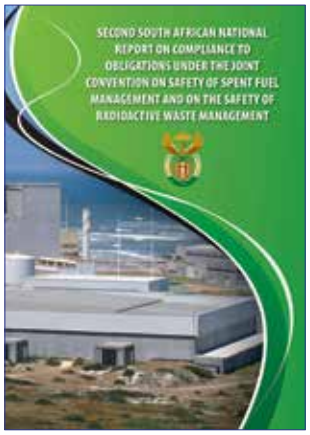
6.10.1 International Co-operation

During the reporting period the NNR fulfilled all its national obligations in terms of section 5(e) of the NNR Act and maintained its active participation in the IAEA Safety Standards Committees as well as several International Regulatory Forums.

Some of the international initiatives undertaken by the NNR, in the period under review, are indicated below:

- **IAEA Convention on Nuclear Safety**
  The NNR participated at the fifth Review Meeting of the Contracting Parties to the Convention on Nuclear Safety (CNS) held at the headquarters of IAEA in Vienna, Austria from 4 to 14 April 2011. The fifth Review Meeting was the first major international nuclear safety meeting following the events of the Fukushima Daiichi Nuclear Power Plant. It was noted that South Africa's Report to the CNS complied with the provisions of the convention as required by contracting parties in the national reports.

- **IAEA Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management**
  The National Report to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was prepared by NNR



South African National report

South African representatives attending the 2011 IAEA General Conference in Vienna

with participation from South Africa industry roleplayers. The NNR co-ordinated and submitted the report on behalf of South Africa to the Joint Convention Secretariat in October 2011.

- **IAEA Safety Standards Committees**

  The IAEA nuclear safety and radiation protection standards have served as references and benchmarks for the global community, including South Africa.

  During the period under review, NNR staff attended several working groups and technical committee meetings of the IAEA. The NNR participated actively in the following Safety Standards Committees:

  - Nuclear Safety Standards Committee (NUSSC)
  - Radiation Safety Standards Committee (RASSC)
  - Waste Safety Standards Committee (WASSC)
  - Transport Safety Standards Committee (TRANSSC)
  - Commission on Safety Standards (CSS)

- **IAEA General Conference**

  The IAEA General Conference is an important annual event, where international regulatory matters are discussed and agreed upon. Furthermore the conference agrees the scope of work to be undertaken by the IAEA during the following year.

  The 55th Annual General Conference of the IAEA was held in Vienna, Austria from 19 to 23 September 2011. The South African delegation attending the conference was represented by officials from DIRCO, DoE, NNR, Eskom and Necsa.

  The NNR participated in several regulatory discussions and also utilised this opportunity to set up bilateral meetings with international counterparts as side events to the general conference. The NNR concluded the signing of the co-operation agreement with the Korean Institute for Nuclear Safety (KINS) during the general conference. The NNR also implemented the South African exhibition at the general conference.

- **IAEA Technical Co-operation Project SAF9004**

  The NNR participated in the IAEA scientific visit which was undertaken under the IAEA Technical Co-operation Project SAF9004 from 4 to 14 October 2011 in France and Germany respectively. The main purpose of the visit was to observe infrastructure that needs to be put in place for disposal of radioactive waste, to obtain specific technical knowledge regarding surface and deep geological disposal, and functioning of a national waste management agency together with the regulatory aspects that have to be planned for by member states.

- **IAEA Technical Co-operation Regional Project RAF/0/033. Regional Training Course on the Overview of the Basic Principles Governing the Safety of Nuclear Installations for countries embarking on nuclear power.**
  The training course was organised under the IAEA Technical Co-operation Regional Project RAF/0/033 during the week of 10 to 14 October 2011 in Vienna, Austria. The training was attended by NNR officials.

- **Multinational Design Evaluation Programme (MDEP)**
  The MDEP was initiated by the United States Nuclear Regulatory Commission (USNRC) to facilitate co-operation among nuclear regulators involved in the safety review of new reactor designs which are intended for construction in world-wide markets or at least in more than one country. The purpose of MDEP is to ensure that a design found suitable in one country, does not have to be substantially modified to meet licensing requirements elsewhere. This can be achieved if the requirements that must be satisfied in one country are consistent with, or at least not significantly different to, those that must be satisfied in another country.

  The NNR has been actively involved in all MDEP activities since its inception. Participation in this initiative, however, is particularly important, given the licensing of new nuclear power plants in light of South Africa's nuclear expansion programme.

- **International meetings, workshops and forums attended by regulatory staff during the period under review include:**
  - IAEA Technical Co-operation Project SAF9004
  - IAEA Technical Co-operation Regional Project RAF/0/033. Regional Training Course on the Overview of the Basic Principles Governing the Safety of Nuclear Installations for countries embarking on nuclear power
  - IAEA Technical meeting on Regulatory Supervision of Legacy Sites (RSLS)
  - IAEA Commission on Safety Standards (CSS)
  - Technical meeting on the International Project on Use of Safety Assessment in Planning and Implementation or Decommissioning of Facilities Using Radioactive Material
  - JIPSA Junior Manager Development Programme (JMD)
  - Bilateral seminar for strengthening nuclear co-operation between the Republic of Korea and the Republic of South Africa
  - IAEA – RSA Country Programme Framework (CPF)

- **During the period under review, the NNR convened bilateral meetings with the following international counterparts:**
  - ASN (France)
  - KINS (Korea)
  - ROSTECHNADZOR (Russia)
  - Meeting with NRC (US)

6.10.2 Regional Co-operation

Within the regional African context, South Africa is a member of the African Regional Co-operative Agreement (AFRA) which was established by the heads of state of African countries that are members of the IAEA. South Africa and the

NNR CEO and the Head of the Korean Institute for Nuclear Safety (KINS) signing the co-operation agreement

Bilateral meeting delegates - South Africa and ASN (France)

Bilateral meeting delegates - South Africa and KINS (South Korea)

NNR in particular, are being called upon to play an increasing role in the strengthening of nuclear and radiation safety regulatory infrastructure throughout the African region.

The NNR continued to represent South Africa in the Forum for Nuclear Regulatory Bodies in Africa (FNRBA).

6.10.3 National Co-operation

In order to give effect to co-operative governance, the NNR enters into strategic co-operation agreements with national and international competent authorities for the purposes of strengthening the nuclear safety regulatory regime.
During the review period the NNR held a Joint Co-ordinating Committee (JCC) meeting with the following entities from the Department of Transport:

- Civil Aviation Authority (CAA)
- South African Maritime Safety Authority (SAMSA)
- Railway Safety Regulator (RSR)
- Road Traffic Management Corporation (RTMC)

The meeting established working groups and the parties continue to co-operate on areas of common regulatory concern.

6.10.4 Stakeholder communications and outreach initiatives

The NNR's communications activities during the period under review focused largely on media liaison, in light of the Fukushima Daiichi nuclear accident in Japan, responding to ongoing stakeholder enquiries, participating at Public Safety Information Forums (PSIF) and refreshing the NNR's corporate branding platform internally.

6.10.4.1 Outreach and awareness creation

- In terms of outreach initiatives, the NNR participated at the Science Unlimited Expo at Hilton College in Pietermaritzburg, Durban which was held from 23 to 25 August 2011. Science Unlimited is South Africa's leading national science, engineering and technology education and awareness project which attracts predominantly grade 5 to12 learners from poor rural and township schools, many travelling hundreds of kilometres to attend Science Unlimited. The Science Unlimited Festival includes science shows, workshops, lectures, demonstrations and interactive exhibitions. During the Expo, NNR staff increased awareness of the role of the NNR and presented career opportunities in the nuclear field to the learners, who received the information positively.

Creating awareness at the Science Unlimited Expo at Hilton College in Pietermaritzburg in August 2011

Raising safety awareness at the Tudor Shaft informal settlement

- In support of government's efforts to promote science and technology education in South Africa, the NNR participated in the DoE's Learner Focus Week in KwaZulu-Natal (KZN) which was held from 10 to 15 July 2011. The Learner Focus Week was hosted by the DoE and offers insight into the energy sector and aims to inspire a new generation of scientists, engineers and related professions. The NNR sponsored co-branded learners backpacks for the event, and staff made presentations to learners during the event.

- Public safety awareness: Tudor Shaft informal settlement. The NNR registered a radiological safety concern at the Tudor Shaft informal settlement which is located in Mogale City. In order to ensure the protection of persons, property and the environment against nuclear damage, the NNR implemented a precautionary campaign to heighten safety awareness among dwellers at the Tudor Shaft informal settlement. The campaign involved distributing safety information leaflets to the informal settlement dwellers and explaining the safety precautionary messages in detail. During the period under review, the NNR CEO participated in an onsite media broadcast interview from the Tudor Shaft informal settlement.

Raising safety awareness at the Tudor Shaft informal settlement

NNR CEO conducting a media interview with SABC TV programme Special Assignment at the Tudor Shaft informal settlement

Officials at the Tudor Shaft informal settlement

Necsa Pelindaba Public Safety Information Forum (PSIF)

6.10.4.2 Public Safety Information Forum (PSIF)

In accordance with the NNR Act the holder of a nuclear installation licence must establish a Public Safety Information Forum to inform the persons living in the relevant municipal area in respect of which an emergency plan has been established in terms of section 38(1) of the Act on nuclear safety and radiation safety matters related to the relevant nuclear installation. In accordance with the provisions of Government Notice No. 299, dated 12 March 2004 and section 26(4) of the NNR Act, Public Safety Information Forums have been established by:

- Eskom for the Koeberg Nuclear Power Station, and
- Necsa for Pelindaba and Vaalputs respectively.

Koeberg Public Safety Information Forum (PSIF)

In terms of Section 4 of the updated Regulations No. 968 dated 12 September 2008, on the establishment of the Public Safety Information Forum, the Board of the National Nuclear Regulator is responsible for appointing the chairpersons and deputy chairpersons for the respective Public Safety Information Forums.

During the period under review, NNR officials attended PSIF meetings and conducted presentations related to emergency planning and preparedness. The PSIF chairpersons and deputy chairpersons were duly appointed by the NNR Board of Directors during the period under review.

6.10.4.3 Observer Programme during Nuclear Regulatory Emergency Exercise at Necsa

During the period under review, the NNR conducted a regulatory emergency exercise at the Necsa Pelindaba site. As part of the regulatory exercise programme, the NNR invited observers from various external stakeholder groups to witness the responses and actions of the functional organisations during an emergency. The observers then participated in a post-exercise debriefing session, where their observations were noted.

6.10.4.4 Stakeholder Perception Survey

The NNR commissions a Stakeholder Perception Survey in order to track and measure stakeholder perceptions of the NNR.

Madibeng Disaster Management Centre

The NNR did not commission a Stakeholder Perception Survey during the reporting period due to updates made to the strategy as a result of organisational dynamics. A Stakeholder Perception Survey will be commissioned in the next reporting period.

6.11 Human Resources

The NNR plays a pivotal role in overseeing the effective regulation of the nuclear industry and the maintenance of high safety standards. The recent developments in the nuclear sector in South Africa, and the ensuing competition for skilled and experienced personnel, have crucial implications for the recruitment, retention and development of trained staff members within the nuclear regulatory function.

This situation, coupled with the realisation that human resources is central to the NNR's overarching strategy, has resulted in the repositioning of human resources as a value-adding, mainstream business partner within the organisation, as well as in the development of a comprehensive Human Resources Strategy, which places greater focus on talent acquisition, development and retention.

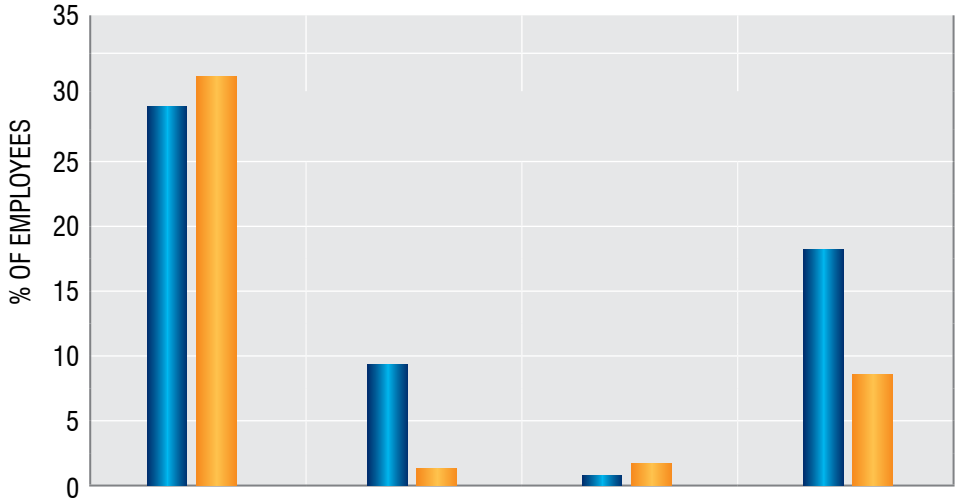
The NNR has implemented a Talent Management Framework, where mission-critical positions were identified and a pool of prospective successors was created. These identified employees will be developed systematically to prepare them to fill these positions. This will assist with the reduction of the organisation's reliance on international consultants.

Further, the NNR has a strategy for succession planning that aims to ensure that pools of staff are available as potential successors for key management positions in the organisation. A Leadership Enhancement Programme was also initiated for managers, with the objective of enhancing the NNR's leadership capability, in order to be better equipped when dealing with current and future challenges facing the organisation.

NNR training expenditure increased significantly, in order to combat the lack of competent and capable people. Skills development is driven by personal development plans, in order to increase the competency levels of all employees. A comprehensive skills audit was undertaken to ascertain the skills required and the extent of the lack of skills, by measuring against those skills that are actually available within the organisation. In addition, a competency framework was also developed. Both were utilised as facilitators with regard to personal development plans.

Table 1: Workforce profile

	Occupational category	Male				Female				TOTAL	Age categories		
		A	C	I	W	A	C	I	W		< 35	35 - 55	> 55
1.	Legislators, senior officials and managers	3	1	1	0	4	1	0	0	10	2	9	0
2.	Professionals	15	5	2	12	8	0	1	1	44	16	19	10
3.	Technicians and associate professionals	6	2	0	3	7	0	0	1	19	9	9	1
4.	Clerks	0	0	0	0	9	1	0	5	15	4	10	1
5.	Plant and machine operators and assemblers	1	0	0	0	0	0	0	0	1	0	1	0
	Total	**25**	**8**	**3**	**15**	**28**	**2**	**1**	**7**	**89**	**31**	**48**	**12**



	Male	28%	9%	1.10%	17%
	Female	31.40%	2.20%	3.30%	8%

Fig 1: Workforce profile

Table 2: Contractor's worker profile

	Occupational category	Male				Female				TOTAL	Age categories		
		A	C	I	W	A	C	I	W		< 35	35 - 55	> 55
1.	Legislators, senior officials and managers	0	0	0	0	1	0	0	0	1	0	1	0
2.	Professionals	0	0	0	0	0	0	0	0	0	0	0	0
3.	Technicians and associate professionals	0	0	1	0	0	0	0	0	1	0	0	1
4.	Clerks	0	0	0	1	0	0	0	0	1	1	0	0
5.	Plant and machine operators and assemblers	0	0	1	0	1	0	0	0	0	0	0	0
	Total	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**1**	**1**	**1**

Table 3: Terminations

	Occupational category	Male				Female				TOTAL
		A	C	I	W	A	C	I	W	
1.	Legislators, senior officials and managers	3	0	0	1	4	1		1	10
2.	Professionals	3	0	0	4	0	0	0	2	9
3.	Technicians and associate professionals	0	0	0	1	1	0	0	0	2
4.	Clerks	0	0	0	0	0	0	0	0	0
5.	Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
	Total	**6**	**0**	**0**	**6**	**5**	**1**	**0**	**3**	**21**

Table 4: Appointments profile

	Occupational category	Male				Female				TOTAL
		A	C	I	W	A	C	I	W	
1.	Legislators, senior officials and managers	0	0	0	0	2	1	0	0	3
2.	Professionals	3	0	0	0	2	0	0	0	5
3.	Technicians and associate professionals	0	0	0	0	2	0	0	0	2
4.	Clerks	0	0	0	0	2	0	0	0	2
5.	Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
	Total	**3**	**0**	**0**	**0**	**8**	**1**	**0**	**0**	**12**

Table 5: Promotions

	Occupational category	Male				Female				TOTAL
		A	C	I	W	A	C	I	W	
1.	Legislators, senior officials and managers	2	1	0	0	0	0	0	0	3
2.	Professionals	5	0	1	1	2	0	0	0	9
3.	Technicians and associate professionals	0	0	0	0	0	0	0	0	0
4.	Clerks	0	0	0	0	0	0	0	0	0
5.	Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
	Total	**7**	**1**	**1**	**1**	**2**	**0**	**0**	**0**	**12**

With the envisaged expansion of the South African nuclear programme, the demand for talented employees is on the increase. The success in meeting this demand depends upon the NNR's ability to recruit and retain people with the necessary skills and experience. The NNR undertook a process of optimisation of its remuneration packages, in order to facilitate greater salary-package flexibility, competitiveness in the market, as well as payment of an equitable rate for services rendered. This strategy has been, and is currently of assistance, in recruiting and retaining talent, by giving employees the choice to structure their remuneration packages according to their personal needs.

The staff complement of the NNR during the reporting period was 106 and is apportioned as follows:

Management	19
Technical/professional staff	61
Support staff	26

It is anticipated that there will be a need to increase the current technical/professional staff complement in the future. A recruitment drive will be undertaken over the next three years and the complement of professional staff will be increased up to 60%.

Table 6: Skills development

	Occupational category	Male				Female				TOTAL
		A	C	I	W	A	C	I	W	
1.	Legislators, senior officials and managers	2	1	1	0	6	1	0	1	12
2.	Professionals	6	0	2	1	7	0	0	1	17
3.	Technicians and associate professionals	1	0	0	0	2	0	0	0	3
4.	Clerks	0	0	0	0	5	0	0	4	9
5.	Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
	Total	9	1	3	1	20	1	0	6	41
	Total cost expenditure									**R404 188.66**

Table 7: Bursaries

	Occupational category	Male				Female				TOTAL
		A	C	I	W	A	C	I	W	
1.	Legislators, senior officials and managers	0	0	0	0	0	0	0	0	0
2.	Professionals	2	0	0	0	1	0	0	0	3
3.	Technicians and associate professionals	0	1	0	0	1	0	1	0	3
4.	Clerks	0	0	0	0	3	0	0	1	4
5.	Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
	Total	2	1	0	0	5	0	1	1	10
	Total cost expenditure									**R208 893.95**

The NNR continues to strive towards maintaining a workforce that mirrors the profile of the people that it services. During the period under review, the NNR achieved a 55% male/female split on the legislators, senior management and managers' level. In line with the NNR's employment equity objectives, African females account for 31.4% of the entire workforce, while African males account for 28%. Nine percent of our workforce is represented by coloured males, while coloured females account for 2.2%. Indian females account for 3.3% while Indian males represent 1.1% of the workforce. White males accounted for 17% and white females accounted for 8%.

During the period under review, the NNR went through a process of restructuring, which resulted in a leaner and flatter structure. With the filling of the new posts created by the restructure, new senior management was born. Significant performance improvements have since been registered and the NNR continues to enjoy innovation, quality work output and a generally positive work ethic. Of the 21 terminations 12 were as a result of retrenchments due to the restructuring process, five were resignations while one person retired and one was terminated through a disciplinary process. Two NNR employees passed away. The statistics reflect a healthy level of labour turnover and a stable work environment.

The NNR continues to invest in internal talent and to provide career growth within the organisation. During the period under review, three employees were promoted to the executive management level. This has ensured continuity and reaffirmed NNR's commitment to the development of internal talent.

Skills development

The NNR invested R208 894 on study aid and R404 189 on skills development interventions. This is to enhance competency levels, ensuring that the NNR workforce performs at high levels. Over and above this, the NNR has ensured high competency levels for the technical employees through continuous participation in international workshops and seminars conducted by IAEA.

7. ANNUAL FINANCIAL STATEMENTS

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DIRECTORS' RESPONSIBILITY AND APPROVAL

The Directors are required 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 entity as at the end of the financial year and the results of its operations and cash flows for the period then ended, in conformity with the Generally Recognised Accounting Practice (GRAP).

The annual financial statements are prepared in accordance with Generally Recognised Accounting Practice and are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgments and estimates.

The Directors acknowledge that they are ultimately responsible for the system of internal financial control established by the entity and place considerable importance on maintaining a strong control environment. To enable the Directors to meet these responsibilities, the Board of Directors sets 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 entity and all employees are required to maintain the highest ethical standards in ensuring the entity's mandate is executed in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the entity is on identifying, assessing, managing and monitoring all known forms of risk across the entity. While operating risk cannot be fully eliminated, the entity endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

Based on the information and explanations given by management, the Directors are of the opinion 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 cash flow forecast for the year to 31 March 2012 and, in the light of this review and the current financial position, they are satisfied that the entity has access to resources to continue in operational existence for the foreseeable future.

The external auditors are responsible for independently reviewing and expressing an independent opinion on the entity's annual financial statements. The annual financial statements have been examined by the external auditors and their report is presented on page 84.

The annual financial statements set out on pages 92 to 115, which have been prepared on the going concern basis, were approved by the Board of Directors on 26 July 2012 and are signed on its behalf by:

Dr T Cohen
Chairperson

Adv BM Mkhize
Chief Executive Officer

REPORT OF THE AUDITOR-GENERAL

REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE NATIONAL NUCLEAR REGULATOR REPORT ON THE FINANCIAL STATEMENTS

Introduction

1. I have audited the financial statements of the National Nuclear Regulator set out on pages 92 to 115 which comprise the statement of financial position as at 31 March 2012, the statement of financial performance statement of changes in net assets and the statement of cash flows for the year then ended the notes comprising a summary of significant accounting policies and other explanatory information.

Accounting Authority's responsibility for the financial statements

2. The Board of Directors which constitutes the accounting authority is responsible for the preparation and fair presentation of these financial statements in accordance with South African Standards of Generally Recognised Accountihg Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA), and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor-General's responsibility

3. My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2001) (PAA), the General Notice issued in terms thereof and International Standards on Auditing. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

4. An audit involves, performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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

Opinion

6. In my opinion, the financial statements present fairly, in all material respects, the financial position of the National Nuclear Regulator as at 31 March 2012 and its financial performance and cash flows for the year then ended in accordance with South African Standards of Generally

Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA).

Emphasis of matter

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

Restatement of corresponding figures

8. As disclosed in note 24 to the financial statements, the corresponding figures for 31 March 2011 have been restated as a result of an error discovered during 31 March 2012 in the financial statements of the public entity.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

9. In accordance with the PAA and the *General Notice* issued in terms thereof, I report the following findings relevant to performance against predetermined objectives, compliance with laws and regulations and internal control, but not for the purpose of expressing an opinion.

Predetermined objectives

10. I performed procedures to obtain evidence about the usefulness and reliability of the information in the annual performance report as set out on pages 26 to 30 of the annual report.

11. The reported performance against predetermined objectives was evaluated against the overall criteria of usefulness and reliability. The usefulness of information in the annual performance report relates to whether it is presented in accordance with the National Treasury annual reporting principles and whether the reported performance is consistent with the planned objectives. The usefulness of information further relates to whether indicators and targets are measurable (i.e. well defined, verifiable, specific, measurable and time bound) and relevant as required by the *National Treasury Framework for managing programme performance information*.

    The reliability of the information in respect of the selected objectives is assessed to determine whether it adequately reflects the facts (i.e. whether it is valid, accurate and complete).

    The material findings are as follows:

Usefulness of information

Performance targets not time bound

12. The National Treasury Framework for managing programme performance information (FMPPI) requires that the time period or deadline for delivery be specified. A total of 57% of the targets relevant to optimising the regulatory framework and enhance stakeholder relations were not time bound in specifying a time period or deadline for delivery. This was due to the lack of key controls in the relevant systems of collection/collation/verification/storage of actual performance information.

Reliability of information

Completeness

13. The National Treasury Framework for managing programme performance information (FMPPI) requires that documentation addressing the systems and processes for identifying, collecting, collating, verifying and storing information be properly maintained. Source information for 27% of the actual reported performance for the selected, was not completely recorded. This was due to a lack of key controls in the relevant systems of collection, collating, verification and storage of actual performance information.

Additional matter

Material adjustments to the annual performance report

14. Material misstatements in the annual performance report were identified during the audit, which were corrected by management.

Compliance with laws and regulations

15. I performed procedures to obtain evidence that the entity has complied with applicable laws and regulations regarding financial matters, financial management and other related matters. My findings on material non-compliance with specific matters in key applicable laws and regulations as set out in the General Notice issued in terms of the PAA are as follows:

Annual financial statements, performance and annual report

16. The financial statements submitted for auditing were not prepared in all material respects in accordance with the requirements of section 55(1)(a) of the PFMA. Material misstatements of capital assets, liabilities, expenditure and disclosure items identified by the auditors were subsequently corrected, resulting in the financial statements receiving an unqualified audit opinion.

Asset management

17. The accounting authority did not implement proper control systems for the safeguarding and maintenance of assets to prevent theft, losses, wastage and misuse as required by section 51(1)(c) of the PFMA.

Cash and cash equivalents

18. Bank reconciliations for the Call Account were not performed on a weekly basis, as required by Treasury Regulation 31.1.2(j).

Internal control

19. I considered internal control relevant to my audit of the financial statements, annual performance report and compliance with laws and regulations. The matters reported below under the fundamentals of internal control are limited to the significant deficiencies that resulted in the findings on the annual performance report and the findings on compliance with laws and regulations included in this report.

Leadership

20. The entity did not have a permanent resource in the Chief Financial Officer capacity for parts of the period under review. Due to this vacancy, there was insufficient leadership and supervision relating to the preparation of the annual financial statements thus resulting in significant adjustments to the annual financial statements. The significant adjustments have led to reportable non-compliance.

Financial and performance management

21. There were insufficient controls for the management of assets at the entity thus resulting in significant adjustments being made to assets mainly due to inadequacies that were identified with regard to the asset management system being used during the financial year which have subsequently been replaced with a new system.

Auditor-General

Pretoria
13 August 2012

AUDITOR-GENERAL
SOUTH AFRICA

Auditing to build public confidence

REPORT FROM THE AUDIT AND RISK MANAGEMENT COMMITTEE

It is with pleasure that we present this report for the financial year ended 31 March 2012.

Audit and Risk Management Committee Members and Attendance

The Audit and Risk Management Committee comprises the members listed on page 15 of the annual report, and is required to meet at least three times per annum, as per its approved terms of reference. During the period under review, the Committee met more than three times. The Committee members' meeting attendance is disclosed on page 15 of the annual report.

Responsibilities of the Audit and Risk Management Committee

The Committee adopted appropriate formal terms of reference in its charter, which are in line with the requirements of Section 51(1)(a) of the Public Finance Management Act (Act 1 of 1999), and Treasury Regulation 27.1. The Committee also conducted its affairs in compliance with its charter. The charter was reviewed and approved by the Board.

The Committee's main duties and activities during the period under review may be summarised as follows:

Effectiveness of Internal Control

The system of internal control, applied by the NNR in terms of financial and risk management, proved to be effective, efficient and transparent.

In line with the PFMA and King III Report on Corporate Governance requirements, Internal Audit provided the Audit and Risk Management Committee and Management with the assurance that the internal controls were appropriate and effective. This was achieved by means of the risk management process, as well as by the identification of corrective actions and the suggested enhancement of both controls and processes. From information gathered from reports received from the Auditor-General of South Africa, it was noted that no matters had been reported, indicating material deficiencies in the NNR system of internal control. Accordingly the Committee is in the position to report that, for the period under review, the system of internal control over financial reporting was reasonable, efficient and effective. A few areas as noted in the AG management letter will however be given attention by the executive in order to further strengthen the system of internal controls.

Evaluation of Financial Statements

The Committee has:

- Reviewed and discussed the audited annual financial statements to be included in the annual report with the Auditor-General of South Africa, as well as the Accounting Authority.

- Reviewed the Auditor-General of South Africa's audit and management report, as well as management's response to the report.
- Reviewed changes in accounting policies and practices.
- Reviewed significant adjustments resulting from the audit.

The Committee concurs with, and accepts the Auditor-General of South Africa's report on the annual financial statements, and is of the opinion that the audited financial statements should be accepted.

Internal Audit

During the period under review, the NNR had an internal audit and risk manager who was assisted by an outsourced audit firm. The Committee approved the internal audit three year rolling strategic and annual plans and reviewed the quarterly reports. The head of internal audit had direct access to the chairpersons of both the Audit and Risk Management Committee and the Board of Directors. The Committee is satisfied with the performance of the internal audit activity, in assisting to address the risks pertinent to the NNR.

Risk Management

The Committee reviewed the NNR's overall approach to risk management and control, as well as the risk management processes and practices, while specifically including the results of the risk management workshops which entailed:

- Management strategies and initiatives in managing the risks facing the NNR;
- Periodic and year-end reports on the status of risk management within the NNR; and
- The review of the fraud prevention policy and other anti-fraud measures.

Auditor-General of South Africa

The Committee reviewed the scope and results of the external audit and its effectiveness. The Committee also met with representatives from the Auditor-General of South Africa to ensure that there were no unresolved issues.

Assessment of the Audit and Risk Management Committee

The Board of Directors evaluated the performance of the Committee and the Committee also conducted a self-assessment of its performance.

Mr T Mofokeng
Chairperson:
Audit and Risk Committee Management Committee

DIRECTORS' REPORT

The Directors have pleasure in submitting their report and the annual financial statements of the entity for the year ended 31 March 2012.

Incorporation

The National Nuclear Regulator is listed as a national public entity in Schedule 3 Part A of the Public Finance Management Act, (Act no. 1 of 1999, as amended). It was established in terms of Section 3 of the National Nuclear Regulator Act, (Act no. 47 of 1999) to:

a) Provide for the protection of persons, property and the environment against nuclear damage, through the establishment of safety standards and regulatory practices;
b) Exercise regulatory control related to safety over:
    i) The siting, design, construction, operation, manufacture of component parts, and the decontamination, decommissioning and closure of nuclear installations; and
    ii) Vessels propelled by nuclear power or having radioactive material on board which is capable of causing nuclear damage, through the granting of nuclear authorisations.
c) Exercise regulatory control over other actions to which the Act applies, through the granting of nuclear authorisations;
d) Provide assurance of compliance with the conditions of nuclear authorisations through the implementation of a system of compliance inspections;
e) Fulfil national obligations in respect of international legal instruments concerning nuclear safety; and
f) Ensure that provisions for nuclear emergency planning are in place.

The Board of Directors is the Accounting Authority in terms of the Public Finance Management Act.

Nature of the Business

The NNR carries out effective regulatory control by developing and implementing regulatory standards and practices that are comparable to internationally accepted standards and practices. Quantitative and qualitative assessment techniques and safety assurance programmes are applied in an efficient and cost-effective manner.

In the course of implementing its mandate, the NNR maintained focus on its transformation objectives, which are captured in the NNR Strategic Plan. In this regard, the Report on Performance against Objectives reflects NNR performance relating to core business, alignment of internal processes to strategy, improvement of stakeholder relations, as well as training and capacity development, employment equity, and preferential procurement.

Financial Overview

Total revenue is made up of authorisation fees, application fees for new operators, a state grant as well as other income. Total revenue increased by 14% (R15.7m), as compared to the previous year. The increase is due to additional invoices issued after the approval of the 2011/12 authorisation fees. Further to that a special grant to compensate the loss of revenue due to the closure of the PBMR project was released in December 2011.

Operating expenses increased by 4.6% (R5.2m) compared to the previous year. The major contributors were the increase in provision for doubtful debts due to liquidations of operations and surrenders of authorisation, the increase in the number of samples for analysis outsourced to Necsa and the loss on the sale of assets.

Events after the Reporting Date

Subsequent to year end all the conditions relating to obtaining finance from Absa were fulfilled for the purchase of the NNR headquarters building from M&T Development which was initially leased. The loan agreement for the bond on the building amounting to R79,000,000 was then signed.

With the exception of the above, the Directors are not aware of any matter or circumstance arising since the end of the Financial year to the date of this report, not otherwise dealt with in the Financial Statements and the Directors' Report, which significantly affect the financial position of the entity or the results of its operations that would require adjustments to or disclosure in the annual financial statements.

Going Concern

The annual financial statements have been prepared on the basis of accounting policies applicable to a going concern principle. This basis presumes 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. The ability of the entity to continue as a going concern is dependent on a number of factors. The most significant of these is that the Department of Energy continues to provide sufficient funding for the ongoing operations of the entity.

The Directors have reviewed the financial performance of the entity for the year ending 31 March 2012, the new financial year ending 31 March 2013 as well as the longer term budget and in light of this review and the current financial position, they are satisfied that the entity has access to resources to continue in operational existence for the foreseeable future.

Directors' Interest in Contracts

All Directors have given general declarations of interest in terms of the NNR's Code of Conduct. These declarations indicate the nature of interest a Director, spouse, partner or close family member holds in a Company, including any Directorship in a company classified as a related party to the NNR. No material contracts in which the Directors have an interest were entered into in the current financial year.

Directors

The Directors of the entity during the year and to the date of this report are as follows:

NAME		APPOINTED	RE-APPOINTED	RESIGNED
Dr T Cohen	Non- executive – Chairperson	1 December, 2009		
Mr T Mofokeng	Non-executive – Deputy Chairperson		1 December, 2009	
Ms A Abader	Non-executive	11 July 2011		
Ms N Cobinnah		11 July 2011		
Mr D Elbrecht	Non-executive		1 December, 2009	
Ms D Kgomo	Non-executive		1 December, 2009	
Mr J Leaver	Non-executive	1 December, 2009		
Mr N Lesufi	Non-executive		1 December, 2009	
Ms M Liefferink	Non-executive	1 December, 2009		16 April, 2012
Mr K Maphoto	Non-executive			
Adv B Mkhize	Chief Executive Officer	15 February, 2010		
Dr T Motshudi	Non- executive	15 February, 2011		
Mr D Netshivhazwaulu	Non-executive	1 August, 2010		30 June 2012

Secretary

The secretary of the Board is Ms B Laka. Her address is as follows:

Official address:
Eco Glades Office Park
Eco Glades 2, Block 6
Witch Hazel Avenue
Highveld Ext 75
Eco Park
Centurion
0046

Postal address:
P.O. Box 7106
Centurion
0046

Auditors

The Financial Statements are subject to auditing by the Auditor-General of South Africa (AGSA) in terms of the provisions of section 188 of the Constitution of the Republic of South Africa, 1996 (the Constitution), read with section 20 of the Public Audit Act, 2004 (Act no. 25 of 2004) (PAA).

Compliance with Legislation

The Directors believe the entity has complied, in all material respects, with the provisions of the PFMA, National Nuclear Regulator Act, (Act no. 47 of 1999), and other applicable legislation during the period under review.

STATEMENT OF FINANCIAL POSITION

as at 31 March 2012

	Note(s)	2012 R	2011 R
Assets			
Non-current assets		**23,132,704**	22,963,665
Property, plant and equipment	2	**20,824,538**	21,474,110
Intangible assets	3	**2,308,166**	1,489,555
Current assets		**66,982,248**	76,047,350
Trade and other receivables	4	**30,367,115**	12,228,794
Cash and cash equivalents	5	**36,615,133**	63,818,556
Assets held for sale and discontinued operations	2.1	**-**	743,498
		90,114,952	99,754,513
Equity and liabilities			
Reserves			
Accumulated surplus		**48,420,833**	47,166,109
Non-current liabilities		**13,055,654**	5,877,654
Post-retirement medical benefits	6	**13,055,654**	5,877,654
Other financial liability	18	**-**	-
Current liabilities		**28,638,465**	46,710,750
Trade and other payables	7	**23,034,753**	22,233,228
Provisions	8	**5,603,712**	7,633,411
Other financial liability	18	**-**	16,844,111
		90,114,952	99,754,513

STATEMENT OF FINANCIAL PERFORMANCE

for the year ended 31 March 2012

	Note(s)	2012 R	2011 R
Revenue	9	**125,580,084**	109,810,396
Expenditure		**126,010,678**	111,969,687
Employee expenses	10.1	**81,706,211**	74,083,213
Services fees	10.2	**10,330,189**	8,122,010
Depreciation, amortisation and write-offs	10.3	**5,046,235**	2,722,400
Loss on disposal of assets	10.3	**907,788**	-
Operating leases	10.4	**12,577,803**	8,815,125
Administrative expenses	10.5	**15,442,452**	18,226,939
Operating surplus/(deficit)		**(430,594)**	(2,159,291)
Finance income	11	**1,748,466**	4,792,669
Finance charge	12	**(63,148)**	(296,283)
Net surplus for the year		**1,254,724**	2,337,095

STATEMENT OF
CHANGES IN EQUITY
as at 31 March 2012

	Note(s)	Accumulated surplus R	Total R
Balance at 31 March 2010		**39,138,062**	39,138,062
Surplus as restated	15	**8,028,047**	8,028,047
Surplus for the period as previously reported		**2,337,095**	2,337,095
Prior year errors	24	**5,690,952**	5,690,952
Balance at 31 March 2011		**47,166,109**	47,166,109
Surplus for the period		**1,254,724**	1,254,724
Balance at 31 March 2012		**48,420,833**	48,420,833

STATEMENT OF CASH FLOW

for the year ended 31 March 2012

	Note(s)	2012 R	2011 R
Cash receipts		**127,619,479**	104,704,639
Authorisation holders		**88,682,114**	79,606,995
State Grant		**35,430,000**	19,954,000
Applicants		**1,670,538**	350,975
Interest received	11	**1,836,827**	4,792,669
Cash payments		**(112,655,216)**	(111,667,350)
Compensation of employees		**(76,557,911)**	(74,077,130)
Goods and services		**(36,097,199)**	(37,886,503)
Interest paid	12	**(106)**	296,283
Cash flow from operating activities	17	**14,964,263**	(6,962,711)
Cash flow from investing activities		**(25,323,572)**	(21,223,278)
Acquisition of property, plant and equipment	2	**(3,911,408)**	(19,741,510)
Acquisition of intangible assets	3	**(1,468,246)**	(1,481,768)
Proceeds on sale of fixed assets		**56,082**	-
Deposit on acquisition of office building		**(20,000,000)**	-
Cash flow from financing activities		**(16,844,114)**	(2,053,042)
Finance lease		**-**	(331,487)
Settlement of post-retirement medical liability		**(16,844,114)**	(1,721,555)
Net increase in cash and cash equivalents		**(27,203,423)**	(30,239,031)
Cash and cash equivalents at the beginning of the year		**63,818,556**	94,057,587
Cash and cash equivalents at the end of the year	5	**36,615,133**	63,818,556

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

for the period ended 31 March 2012

1. Presentation of annual financial statements

The following are the principal accounting policies of the entity which are, in all material respects, consistent with those of the previous year.

1.1 Basis of preparation

The annual financial statements are prepared under the historical cost basis, except where otherwise specified. The annual financial statements are prepared in accordance with the South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) issued by the Accounting Standard Board, and in the manner required by the Public Finance Management Act (Act no.1 of 1999).

These annual financial statements are presented in South African Rands.

Assets and liabilities or income and expenditure will not be offset, unless it is required or permitted by a standard.

GRAP 1, Presentation of Financial Statements, requires entities to provide information on their actual performance against the entity's approved budget. A reconciliation to ensure full compliance with GRAP1 is included as a disclosure note to the financial statements.

1.2 Going concern assumption

The financial statements have been prepared on a going concern assumption that the entity will continue to be in operation for the foreseeable future.

1.3 Significant accounting judgments and estimates

In preparing the annual financial statements, management is required to make estimates and assumptions that affect the amounts represented in the annual financial statements and related disclosures. In addition management is required to exercise its judgment in the process of applying the NNR accounting policies. Use of available information and the application of judgment are inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the annual financial statements. Significant judgments include:

Post-employment medical care benefits

The costs and liabilities of the post-employment medical care benefits are determined using methods relying on actuarial estimates and assumptions. Advice is taken from the independent actuaries relating to the appropriateness of the assumptions. Changes in the assumptions used may have a significant effect on the statement of comprehensive income and statement of financial position.

Provision for impairment of receivables

A provision for impairment of trade receivables is established when there is objective evidence that the NNR will not be able to collect all amounts due according to the original terms of receivables. The calculation of the amount to be provided for impairment of receivables requires the use of estimates and judgments (note 4).

Annual evaluation of property, plant and equipment and intangibles

In order to review property, plant and equipment and intangibles for possible impairment, changes in useful life and changes in residual values at the end of each financial year in accordance with notes 2 and 3, reference is made to historical information and intended use of assets.

The preparation of financial statements requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting periods. Although these estimates are based on management's best knowledge of current events and actions that the entity may undertake in the future, actual results may ultimately differ from those estimates.

The presentation of the results of operations, financial position and cash flows in the financial statements of the entity is dependent upon and is sensitive to the accounting policies, assumptions and estimates that are used as a basis for the preparation of these financial statements. Management has made certain judgments in the process of applying the entity's accounting policies.

1.4 Revenue recognition

Revenue comprises authorisation fees and revenue from special projects. Revenue arising from authorisation fees which are published in the Gazette by the Minister on an annual basis is recognised on an accrual basis in accordance with the substance of the relevant arrangement with the licensed holders. Revenue from special projects is recognised in accordance with arrangements with authorisation holders.

1.5 Government grants

Government grants are recognised in profit and loss when there is reasonable assurance that they will be received and that the entity will comply with the conditions associated with the grant.

1.6 Irregular, fruitless and wasteful expenditure

Irregular expenditure means expenditure incurred in contravention of, or not in accordance with, a requirement of any applicable legislation, including the PFMA. Fruitless and wasteful expenditure means expenditure that was made in vain and would have been avoided had reasonable care been exercised. All irregular, fruitless and wasteful expenditure is charged against income in the period in which it is incurred.

1.7 Foreign currencies

Transactions in foreign currencies are accounted for at the rates of exchange ruling on the date of the transactions. Gains and losses arising from the settlement of such transactions are recognised in the income statement.

1.8 Interest received

Interest is recognised on a time proportionate basis taking into account the principal amount outstanding and the effective interest rate.

1.9 Property, plant and equipment

Property, plant and equipment (owned and leased) are stated at historical cost less accumulated depreciation and adjustment for any impairments. Costs include those incurred initially to acquire an item of property, plant and equipment and costs incurred subsequently to add to, replace part of, or service it if it is probable that future economic benefits associated with the replacement will flow to the NNR and the cost can be measured reliably. 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. Estimates are mainly based on historical information relating to use of the asset. Depreciation is calculated on the straight-line method to write off the cost, less residual value, of each asset over their estimated useful lives as follows:

ITEM	YEAR
Freehold land	Not depreciated
Building	20
Furniture	10 -25
Office equipment	5-25
Computer equipment	3-5
Security equipment	-
Scientific and technical equipment	5
Capitalsed leased asset	5
Motor vehicle	5
Leasehold improvements	Over the lease period

The depreciation charge for each period is recognised in surplus or deficit.

The assets' residual values, useful lives and depreciation methods are reviewed, and adjusted if appropriate, at each reporting date. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.

The gains or losses arising from derecognition of an item of property, plant and equipment is included in surplus or deficit when the item is derecognised. The gain or loss arising from 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.

1.10 Intangible asset

Research and development

Expenditure on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, is recognised in the Statement of Financial Performance as an expense in the period incurred.

Expenditure on development activities, whereby research findings are applied to a plan or design for the production of new or substantially improved products and processes, is capitalised if the development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the entity has sufficient resources to complete development, and to use or sell the asset. The expenditure capitalised includes the cost of materials, direct labour and an appropriate proportion of overheads. Capitalised development expenditure is stated at cost less accumulated amortisation and impairment losses.

Computer software

Acquired computer software licences are capitalised on the basis of the costs incurred to acquire and bring to use the specific software. Estimates are mainly based on historical information relating to use of the asset and all residual values are nil.

Amortisation is charged to the Statement of Financial Performance on a straight-line basis over the estimated useful lives of intangible assets.

ITEM	YEAR
Software	Three years

The gains or losses arising from derecognition of an item of intangible asset is included in surplus or deficit when the item is derecognised. The gain or loss arising from 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.

1.11 Subsequent expenditure

Subsequent expenditure on item of property, plant and equipment, and intangible assets is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure is recognised in the Statement of Financial Performance as an expense when incurred.

1.12 Impairment of non-financial assets

Assets are assessed at the end of each reporting period for any indication that they may be impaired. If indications exist, the recoverable amount of the asset is estimated. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. The NNR assesses at each reporting date whether there is any indication that an impairment loss recognised in prior periods for assets 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 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 years. A reversal of an impairment loss of assets carried at cost less accumulated depreciation or amortisation is recognised immediately in the Statement of Financial Performance.

1.13 Accounting for leases

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership to the lessee. A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incidental to ownership to the lessee.

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 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 – lessee

Operating lease payments are recognised as an expense on a straight-line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments is recognised as an operating lease liability. This liability is not discounted. Any contingent rents are expensed in the period in which they are incurred.

1.14 Financial instruments

Recognition and initial measurement

All financial instruments are initially recognised at fair value, plus, in the case of financial assets and liabilities not at fair value through surplus or deficit, transaction costs that are directly attributable to the acquisition or issue. Financial instruments are recognised when the entity becomes a party to their contractual arrangements. All regular way transactions are accounted for on settlement date. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the period generally established by regulation or convention in the marketplace.

Derecognition

Financial assets are derecognised when the contractual rights to receive cash flows have been transferred or have expired or when substantially all the risks and rewards of ownership have passed. All other assets are derecognised on disposal or when no future economic benefits are expected from their use.

Financial liabilities are derecognised when the relevant obligation has either been discharged or cancelled or has expired.

Subsequent measurement

Subsequent to initial recognition, the entity classifies financial assets as 'at fair value through surplus or deficit', 'held-to-maturity investments', 'loans and receivables', or 'available-for-sale'.

Gains and losses

Gains or losses arising from changes in financial assets or financial liabilities carried at amortised cost are recognised in the Statement of Financial Performance when the financial asset or financial liability is derecognised or impaired, and through the amortisation process.

Financial assets

The NNR classifies its financial assets into one of the categories discussed below, depending on the purpose for which the asset was acquired. The NNR has not classified any of its financial assets as held to maturity, fair value through profit and loss or available for sale.

The accounting policy for each category is as follows:

Loans and receivables
These assets are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They arise principally through the provision of services to licensed holders. They are initially recognised at fair value plus transaction costs that are directly attributable to their acquisition or issue, and are subsequently carried at amortised cost less provision for impairment.

Impairment provisions are recognised when there is objective evidence (such as significant financial difficulties on the part of the counterpart or default or significant delay in payment) that the NNR will be unable to collect all of the amounts due under the terms receivable. Trade receivables, which are reported net of such provisions, are recorded in a separate

allowance account with the loss being recognised within operational expenditure in the Statement of Financial Performance. On confirmation that the trade receivable will not be collectable, the gross carrying value of the asset is written off against the associated provision. The loans and receivables comprise trade and other receivables at reporting date.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand 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. Cash and cash equivalents include cash on hand and deposits held at call.

Financial liabilities

Bank borrowings are initially recognised at fair value net of any transaction costs directly attributable to the issue of the instrument. Such interest-bearing liabilities are subsequently measured at amortised cost using the effective interest rate method, which ensures that any interest expense over the period to repayment is at a constant rate on the balance of the liability carried in the statement of financial position. Trade payables are initially recognised at fair value and subsequently carried at amortised cost using the effective interest method.

1.15 Employee benefits

The NNR provides defined benefit plans for certain post-retirement benefits. The entity's net obligation in respect of defined benefits is calculated by estimating the amount of future benefits earned in return for services rendered. The obligation and assets related to each of the post-retirement benefits are determined through an actuarial valuation. The assumptions determined by management make use of information obtained from the entity's employment agreements with staff and pensioners, market related returns on similar investments, and market related discount rates and other available information. The assumptions concerning the expected return on asset and expected change in liabilities are determined on a uniform basis, considering long-term historical returns and future estimates of returns and medical inflation expectations. In the event that further changes in assumptions are required, the future amounts of post-retirement benefits may be affected materially.

The overall expected rate of return on asset is determined based on the market prices prevailing at that date, applicable to the period over which the obligation is to be settled.

Post-employment benefits

The NNR provides defined benefit and defined contribution plans for the benefit of employees. These plans are funded by the employees and the entity, taking into account recommendations of the independent actuaries. The post-retirement medical liability is unfunded.

Defined contribution plans

The entity's funding of the defined contribution plans is charged to employee expenses in the same year as the related service is provided.

Defined benefit plans

The entity provides defined benefit plans for retirement and post-retirement medical aid benefits to qualifying employees. The entity's net obligation in respect of defined benefits is calculated separately for each plan by estimating the amount of future benefits earned in return for services rendered.

The amount recognised in the statement of financial position represents the present value of the defined benefit obligations, calculated by using the projected unit credit method, as adjusted for unrecognised actuarial gains and losses, unrecognised past service costs, if any, and reduced by the fair value of the related plan assets.

The amount of any surplus recognised and reflected as deferred expenses is limited to unrecognised actuarial losses and past service costs plus the present value of available refunds and reductions in future contributions to the plan. To the extent that there is uncertainty as to the entitlement to the surplus, no asset is recognised. No gain is recognised solely as a result of an actuarial loss or past service cost in the current period and no loss is recognised solely as a result of an actuarial gain or past service cost in the current period. The entity recognises actuarial gains and losses for all its defined plans in the period in which they occur.

Past service costs are recognised immediately to the extent that the benefits are vested, otherwise they are recognised on a straight-line basis over the average period the benefits become vested.

Short-term employee benefit

The cost of all short-term Employee benefits is recognised during the period in which the employee renders the related service. Provision for employee's entitlement to annual leave represents a present obligation which NNR has to pay as a result of employee's services provided to the reporting date. Annual leave is provided for over the period that the leave accrues.

1.16 Provisions and contingent liability

Management judgment is required when recognising and measuring provisions and when measuring contingent liabilities as set out in Notes 8 and 15 respectively. The probability that an outflow of economic resources will be required to settle the obligation must be assessed and a reliable estimate must be made of the amount of the obligation.

The entity is required to recognise provisions for claims arising from litigation when the occurrence of the claim is probable and the amount of the loss can be reasonably estimated. Liabilities provided for legal matters require judgments regarding projected outcomes and ranges of losses based on historical experience and recommendations of legal counsel.

Litigation is however unpredictable and actual costs incurred could differ materially from those estimated at the reporting date.

1.17 Related parties

Parties are considered to be related if one party has the ability to control the other party or to exercise significant influence or joint control over the other party in making financial and operating decisions.

1.18 Comparatives

Comparative figures are restated in the event of a change in accounting policy or prior period error.

1.19 Events after reporting date

Recognised amounts in the Annual Financial Statements are adjusted to reflect events arising after the reporting date that provide evidence of conditions that existed at the reporting date. Events after the Statement of Financial Position that are indicative of conditions that arose after the reporting date are dealt with by way of a note.

2. Property, Plant and Equipment

	2012			2011		
	Cost R	Accumulated depreciation R	Carrying value R	Cost R	Accumulated depreciation R	Carrying value R
Property, plant and equipment	**29,281,661**	**8,457,123**	**20,824,538**	25,441,915	3,967,805	21,474,110
Furniture	**4,008,746**	**343,066**	**3,665,680**	3,804,585	218,767	3,585,818
Office equipment	**7,482,111**	**1,246,189**	**6,235,922**	4,540,262	316,346	4,223,916
Computer equipment	**8,176,256**	**3,590,893**	**4,585,363**	7,715,523	2,119,307	5,596,216
Scientific and technical equipment	**2,536,060**	**1,334,821**	**1,201,239**	2,536,061	827,917	1,708,144
Motor vehicle	**210,848**	**110,334**	**100,514**	210,848	20,259	190,589
Leasehold improvement	**6,440,140**	**1,682,195**	**4,757,945**	6,207,136	326,600	5,880,536
Building	**213,750**	**149,625**	**64,125**	213,750	138,609	75,141
Freehold land	**213,750**	**-**	**213,750**	213,750	-	213,750

The carrying amounts of property, plant and equipment can be reconciled as follows:

2012	Carrying value at the beginning of the year	Additions	Depreciation*	Disposals and write off	Transfers in/out	Carrying value at the end of the year
Furniture	**3,585,818**	**159,993**	**(8,647)**	**(223,926)**	**152,442**	**3,665,680**
Office equipment	**4,223,916**	**3,023,094**	**(949,423)**	**(61,765)**	**100**	**6,235,922**
Computer equipment	**5,596,216**	**495,317**	**(1,528,919)**	**(31,262)**	**54,011**	**4,585,363**
Scientific and technical equipment	**1,708,144**	**-**	**(506,905)**	**-**	**-**	**1,201,239**
Motor vehicle	**190,589**	**-**	**(90,075)**	**-**	**-**	**100,514**
Leasehold improvement	**5,880,536**	**233,004**	**(1,355,595)**	**-**	**-**	**4,757,945**
Building	**75,141**	**-**	**(11,016)**	**-**	**-**	**64,125**
Freehold land	**213,750**	**-**	**-**	**-**	**-**	**213,750**
	21,474,110	**3,911,408**	**(4,450,580)**	**(316,953)**	**206,553**	**20,824,538**

* The depreciation includes prior year adjustments amounting to R139,449.

2011						
Furniture	1,299,204	3,135,669	(113,373)	-	(735,682)	3,585,818
Office equipment	609,551	3,829,737	(183,493)	(24,163)	(7,716)	4,223,916
Computer equipment	1,856,171	4,666,043	(905,691)	(20,207)	(100)	5,596,216
Scientific and technical equipment	830,772	1,284,756	(407,384)	-	-	1,708,144
Capitalised leased asset - Office equipment	303,370	-	(303,370)	-	-	-
Motor vehicle	205,801	-	(15,212)	-	-	190,589
Leasehold improvement	-	6,207,136	(326,600)	-	-	5,880,536
Building	85,829	-	(10,688)	-	-	75,141
Freehold land	213,750	-	-	-	-	213,750
	5,404,448	19,123,341	(2,265,811)	(44,370)	(743,498)	21,474,110

The freehold land and building consist of office block situated on erf 3187 Melkbosch Strand in the Blaauwberg Municipality, Cape Division, Western Cape.

2. Property, Plant and Equipment

	2012 R	2011 R
2.1 Assets held for sale and discontinued operations		
The NNR Board approved the disposal of identified items of property, plant and equipment on 28 January 2011. The carrying value of items of property, plant and equipment to be disposed are listed below.		
Assets held for sale	**743,498**	743,498
Less: assets sold	**(619,635)**	-
Assets reinstated	**(123,863)**	-
	-	743,498

3. Intangible asset

	2012			2011		
	Cost R	Accumulated amortisation R	Book value R	Cost R	Accumulated depreciation R	Book value R
Computer software	**3,287,801**	**(979,635)**	**2,308,166**	1,873,466	(383,911)	1,489,555

The carrying amounts of intangible assets can be reconciled as follows:

2012	Carrying value at the beginning of the year	Additions	Amortisation	Transfers in/out	Carrying value at the end of the year
Computer software	**1,489,555**	**1,468,246**	**(595,724)**	**(53,911)**	**2,308,166**
2011					
Computer software	377,667	1,481,768	(369,880)	-	1,489,555

4. Trade and Other Receivables

Trade receivables	**10,961,020**	11,791,321
Less: Provision for doubtful debts	**(3,156,550)**	(1,560,237)
Less: Fair value adjustment	**(334,737)**	(271,696)
Net trade receivables	**7,469,733**	9,959,388
Other receivables	**22,897,382**	2,269,406
	30,367,115	12,228,794

5. Cash and Cash Equivalent

Bank balance	**12,238,711**	22,787,708
Call Account	**24,368,922**	41,023,348
Petty cash	**7,500**	7,500
	36,615,133	63,818,556

6. Employee Benefit

	2012 R	2011 R

The NNR provides a benefit for all its permanent employees through the National Nuclear Regulator Retirement Fund. Membership of the fund is compulsory. The fund consists of both a defined benefit and defined contribution fund. The fund is governed by the Pension Fund Act, 1956 (Act no. 24 of 1956).

In addition, certain retired employees receive medical aid benefits. The liabilities for all of the benefits are actuarially determined in accordance with accounting requirements each year. In addition, a statutory funding valuation for the retirement is performed at intervals not exceeding three years.

The number of employees at 31 March 2012 was 85 (2011: 94)

Actuarial valuations were performed by qualified actuaries to determine the benefit obligation, plan asset and service costs for the pension and retirement funds for each of the financial periods presented.

6.1 The National Nuclear Regulator Retirement Fund

The latest valuation performed at 31 March 2012 indicates that the pension fund is in a surplus position of R7, 579,000, after unrecognised gains. The recognition of the surplus is limited due to the application of the asset limitation criteria in IAS19.

The last statutory fund valuation of the fund performed on 31 March 2012 indicated that the fund is fully funded. The current contributions are based on that valuation.

The funded status of the National Nuclear Regulator Fund is disclosed below.

Defined Benefit Plan

The net periodic retirement costs include the following components:		
Service cost	**580,000**	610,000
Interest cost	**4,117,000**	3,860,000
Expected return on plan asset	**(5,499,000)**	(4,912,000)
Recognised actuarial (gain)/ loss	**3,507,000**	(1,083,000)
Net periodic retirement (benefit)/costs	**2,705,000**	(1,525,000)
Movement in liability		
Opening balance	**46,356,000**	43,786,000
Amounts recognised in income statement	**3,365,000**	6,756,000
Current service cost	**580,000**	610,000
Interest cost	**4,117,000**	3,860,000
Actuarial (gain)/ loss	**(1,332,000)**	2,286,000
Benefit paid	**(3,579,000)**	(4,186,000)
Closing balance	**46,142,000**	46,356,000
Plan asset at fair value:		
Opening balance	**54,730,000**	52,379,000
Expected return on plan asset	**5,499,000**	4,912,000
Benefit paid	**(3,579,000)**	(4,186,000)
Contributions	**578,000**	542,000
Actuarial (loss)/gain	**(3,507,000)**	1,083,000
Closing balance	**53,721,000**	54,730,000

6. Employee Benefit (cont.)	2012 R	2011 R
Status of the retirement fund:		
Present value of funded obligation	**(46,142,000)**	(46,356,000)
Fair value of plan assets	**53,721,000**	54,730,000
Fund status	**7,579,000**	8,374,000
Net Asset	**(7,579,000)**	(8,374,000)
Net liability limited as per IAS19 paragraph 58		
Expected return on plan asset	**5,499,000**	4,912,000
Actuarial gain/ (loss) on plan asset	**(3,507,000)**	1,083,000
Actual return on plan asset	**1,992,000**	5,995,000
Post-retirement retirement fund: defined benefit		
Current service cost	**580,000**	610,000
Interest cost	**4,117,000**	3,860,000
Actuarial loss/(gain)	**3,507,000**	(1,083,000)
Expected return on plan asset	**(5,499,000)**	(4,912,000)
Reversal of prior year unrecognised post-retirement benefit asset	**(8,374,000)**	(8,593,000)
Unrecognised post-employment benefit asset	**7,579,000**	8,374,000
	1,910,000	(1,744,000)
Funding levels	**116.1%**	118.1%
Principal actuarial assumptions were as follows:		
Discount rate %	**8.4%**	9.20%
Expected return on plan assets %	**10.1%**	9.70%
General inflation rate	**6.1%**	6.30%
Salary inflation rate %	**7.1%**	7.30%
Pension increase %	**4%**	4.00%

a. Defined Contribution Fund

All new employees and existing employees that selected to be transferred to the defined contribution plan are members of the NNR Retirement Fund - defined contribution plan. The plan is administered by ABSA Consultants and Actuaries (Proprietary) Limited. The current contributions to the retirement fund amounted to R7,883,296 (2011: R7,691,878).

6.2 Post-retirement medical benefit

The NNR makes certain contributions to medical funds in respect of current and retired employees. The NNR has terminated future post-retirement medical benefits in respect of employees joining after 31 December 1995.

Post-retirement medical benefit

The entity pays 100% of the membership subscriptions for staff members who had retired from the services of the NNR (the then Council for Nuclear Safety) on or before 30 July 1990 and also for those staff members retiring from the services of the entity on or after 1 July 1990, who were in the continuous employment of the entity before 1 July 1990 to the date of retirement.

The NNR introduced a sliding scale for membership subscriptions for staff joining after 1 July 1990. Subsidy reduced stepwise from 100% each six months to a minimum of 60% for employees that joined the NNR after 1 July 1990 and before 31 December 1995. Eligible employees must be employed by the NNR until retirement age to qualify for the post-retirement medical aid benefit. The most recent actuarial valuation of the benefit was performed at 31 March 2012.

During the year ended 31 March 2012, five members who initially opted for the transfer of their post retirement benefit to the Absa pension fund, decided to reverse their option, based on the latest information received about their option. The funds paid to ABSA were transferred back to the NNR and this resulted in the increase of post-retirement liability.

6. Employee Benefit (cont.)	2012 R	2011 R
Post-retirement medical benefit (continued)		
The obligation is unfunded.		
Movement in liability:		
Opening balance	**5,877,654**	33,360,650
Amounts recognised in profit and loss	**7,505,000**	(1,704,000)
Current service cost	**18,000**	401,000
Interest cost	**527,000**	2,668,000
Actuarial loss/(gain)	**6,960,000**	(4,773,000)
Benefit payments	**(327,000)**	(1,523,996)
Settlement	**-**	(24,255,000)
Closing balance	**13,055,654**	5,877,654
Present value of unfunded obligation	**13,055,654**	5,877,654
Principal actuarial assumptions were as follows:		
Discount rate %	**8.5%**	9.25%
Medical inflation rate %	**7.9%**	8.25%
Number of members in active employment	**4**	19
Number of pensioners	**8**	34
Average retirement age	**60**	60
Proportion continuing membership at retirement	**100%**	100%
Proportion of retiring members who are married	**90%**	90%
Age of spouse	*In-service members:* husbands 3 years older than wives *Retired members:* actual age	*In-service members:* husbands 3 years older than wives *Retired members:* actual age
Mortality of in-service members	Males: SA8590L (Ult) Females: 55% of SA8590L(Ult)	Males: SA8590L (Ult) Females: 55% of SA8590L(Ult)
Mortality of continuation members	Males: PA(90)M less 3 years Female: PA(90)F less 1 year	Males: SA8590L(Ult) Females: 55% of SA8590L(Ult)

No explicit assumption was made about additional mortality or health care costs due to AIDS.

7. Trade and Other Payables

	2012 R	2011 R
Accounts payable	**758,129**	3,127,625
Less: Fair value adjustment	**(14,358)**	(85,105)
Accruals	**1,976,312**	649,279
Other payables	**2,314,671**	541,429
Special grant	**18,000,000**	18,000,000
	23,034,753	22,233,228

8. Provisions

	2012				2011			
	Annual leave	*Bonus	Restruc-turing	Total	Annual leave	Bonus	Restruc-turing	Total
Opening balance	**4,888,922**	**802,604**	**1,941,885**	**7,633,411**	4,784,704	893,918	-	5,678,622
Charge to employee cost	**4,875,440**	**728,271**	**-**	**5,603,711**	4,888,922	802,604	1,941,885	7,633,411
Utilisation of provision	**(4,888,922)**	**(802,604)**	**(1,941,885)**	**(7,633,411)**	(4,784,704)	(893,918)	-	(5,678,622)
Closing balance	**4,875,440**	**728,271**	**-**	**5,603,711**	4,888,922	802,604	1,941,885	7,633,411

9. Revenue

Authorisation fees	**88,479,789**	89,505,421
Other income	**1,670,295**	350,975
	90,150,084	89,856,396
Government grant	**35,430,000**	19,954,000
	125,580,084	109,810,396

Included in government grant is a special grant as a result of loss of the PBMR income amounting to R21,192,000.

10. Operating Expenses

10.1 Employee expenses	**81,706,211**	74,083,213
Employee expenses include:		
Salaries	**66,879,386**	65,716,909
Employer contribution to medical aid	**1,945,234**	2,362,300
Employer contribution to retirement fund – defined benefit	**376,356**	389,917
Employer contribution to retirement fund – defined contribution	**4,556,133**	5,187,083
Post-retirement medical benefit	**7,505,000**	(1,706,000)
Current service costs	**18,000**	401,000
Interest costs	**527,000**	2,668,000
Actuarial loss/(gain)	**6,960,000**	(4,775,000)
Restructuring costs	**-**	1,941,885
Other employee costs	**444,102**	191,119

10. Operating Expenses (cont.)

	2012 R	2011 R
10.2 Service fees	**10,330,189**	8,122,010
Technical services	**4,194,577**	4,000,048
Services contracts	**3,675,721**	1,415,346
External audit	**1,128,884**	755,532
Current year	**1,128,884**	755,532
Prior year		-
Internal audit	**247,864**	1,434,739
Audit	**247,864**	1,434,739
Other		-
Legal fees	**299,715**	-
Non-executive Directors – for services as Directors	**751,893**	502,217
Independent Audit Committee Member	**31,535**	14,128
10.3 Depreciation, amortisation, write-offs and impairment	**5,954,023**	2,722,400
Depreciation on property, plant and equipment	**4,450,580**	2,308,150
Amortisation on intangible assets	**595,655**	369,880
Loss on disposal of assets	**907,788**	-
Write-offs and impairment on property, plant and equipment	**-**	44,370
10.4 Operating leases	**12,577,803**	8,815,125
Office building	**12,317,120**	8,742,284
Equipment	**260,683**	72,841
10.5 Administrative expenses	**15,442,452**	18,226,939
Repairs and maintenance	**466,017**	4,033,379
Training and development	**1,343,043**	1,571,445
Travelling	**5,493,887**	5,140,432
General expenses	**8,139,505**	7,481,683

11. Finance Income

Finance income	**1,748,429**	4,792,669
Interest received	**1,836,790**	4,707,564
Fair value adjustment on financial instrument	**(88,361)**	85,105

12. Finance Charges

Finance charges	**63,148**	296,283
Interest	**106**	24,587
Fair value adjustment on financial instrument	**63,042**	271,696

13. Directors Emoluments

2012	Fees	Performance Bonus	Retirement fund contribution	Other benefits	Total
Non-executive Director					
Dr T Cohen – Chairperson	**66,654**	-	-	-	**66,654**
Mr T Mofokeng – Deputy Chairperson	**136,761**	-	-	-	**136,761**
Mr D Elbrecht	**75,428**	-	-	-	**75,428**
Ms M Liefferink	**87,916**	-	-	-	**87,916**
Mr N Lesufi	**101,181**	-	-	-	**101,181**
Mr J Leaver	**107,429**	-	-	-	**107,429**
Mr TM Motshudi	**94,706**	-	-	-	**94,706**
Mr DS Netshivhazwaulu	**81,818**	-	-	-	**81,818**
	751,893				**751,893**

2012					
Independent Audit Committee member					
Ms E Thema	**31,535**	-	-	-	**31,535**

2012					
Executive Director					
Adv BM Mkhize (CEO)	**1,581,344**	**263,834**	**151,898**	-	**1,997,076**

2012					
Executive staff					
Ms RJ Magoele[2]	**445,255**	-	**25,907**	**5,767**	**476,929**
Ms LG Mashishi[2]	**389,320**	-	**17,439**	**372,561**	**779,320**
Mr M Msebenzi[2]	**476,693**	-	**43,658**	**607,084**	**1,127,435**
Mr JN Mwase[2]	**397,189**	-	**54,807**	**353,035**	**805,031**
Ms JL Meyer[3]	**306,702**	-	**11,381**	-	**318,083**
Ms ZP Mbatha[1]	**186,676**	-	**12,155**	-	**198,831**
Mr CO Phillips[1]	**1,107,202**	**44,797**	**73,689**	**45,816**	**1,271,504**
Mr KW Leotwane[4]	**781,642**	-	**38,678**	**32,383**	**852,703**
Mr T Tselane[1]	**82,068**	-	**8,694**	**2,629**	**93,391**
	4,172,747	**44,797**	**286,408**	**1,419,275**	**5,923,227**

Legend
[1] Mr CO Phillips was appointed on 1 July 2011
[1] Mr T.Tselane was appointed on 1 March 2012
[1] Ms ZP Mbatha was appointed on 16 January 2012
[2] Ms R Magoele resigned on 30 June 2011
[2] Ms LG Mashishi was released from duty due to operational requirements on 30 June 2011
[2] Mr MZ Msebenzi was released from duty due to operational requirements on 30 June 2011
[2] Mr JM Mwase was released from duty due to operational requirements on 30 June 2011
[3] Ms JL Meyer was appointed on 1 September 2011 and resigned on 31 December 2011
[4] Mr KW Leotwane was deceased on 6 January 2012

13. Directors Emoluments (cont.)

2011	Fees	Performance Bonus	Retirement fund contribution	Other benefits	Total
Non-executive Director					
Dr T Cohen – Chairperson	71,260	-	-	-	71,260
Mr T Mofokeng – Deputy Chairperson	105,889	-	-	-	105,889
Mr D Elbrecht	68,749	-	-	-	68,749
Ms M Liefferink	60,932	-	-	-	60,932
Mr N Lesufi	69,778	-	-	-	69,778
Mr J Leaver	71,572	-	-	-	71,572
Prof D van der Merwe	54,037	-	-	-	54,037
	502,217	-	-	-	502,217

2011					
Independent Audit Committee member					
Ms E Thema[1]	14,128	-	-	-	14,128

[1] Ms Thema was appointed on 1 October 2010

2011					
Executive Director					
Adv BM Mkhize (CEO)	1,493,545	-	144,410	-	1,637,955

2011					
Executive staff					
Ms RJ Magoele	1,232,542	-	102,583	32,645	1,367,770
Ms LG Mashishi	1,101,436	-	51,791	-	1,153,227
Mr JN Mwase	1,208,494	-	162,765	23,938	1,395,197
Mr M Msebenzi	1,332,381	-	129,653	20,851	1,482,885
	4,874,853	-	446,792	77,434	5,399,079

14. Commitment

14.1 Operating lease

2012	Total	Up to 1 year	2 to 3 years
Building	**43,996,216**	**12,278,014**	**31,718,203**
Equipment	**435,640**	**237,621**	**198,019**
	44,431,856	**12,515,635**	**31,916,222**

2011			
Building	56,274,230	12,278,014	43,996,216
Equipment	673,261	237,621	435,640
	56,947,491	12,515,635	44,431,856

14. Commitment (cont.)

	2012 R	2011 R
14.2 Capital expenditure		
Commitments against authorised capital expenditure	**79,000,000**	-
Authorised capital expenditure not yet contracted	**-**	-
Capital commitment authorised	**79,000,000**	-

The following capital commitments will be financed through the approved budget and the accumulated surplus provided the National Treasury to approve the NNR request to retain the surplus.

15. Contingent Liability

Surplus	**1,254,724**	8,028,047

A contingent liability has arisen as a result of NNR having a surplus for the reporting period. The extent to which an outflow of funds will be required is dependent on the outcome of the application to retain the funds in terms of Section 53 (3) of the PFMA.

16. Related Parties

During the year under review, the NNR, in the ordinary course of its business, entered into various transactions with related parties which terms are no less favourable than with third parties.

Directors
Details of Directors' emoluments are disclosed under note 13.

Transactions with Directors
All Directors have given general declarations of interest in terms of section 243 (3a) of the Companies Act. These declarations indicate that no member of the Board holds other Directorships in South African entities with whom transactions are conducted by NNR in terms of a customer/supplier relationship.

Transactions with National Departments of Government
All National Departments of Government 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 (AC 126) - Related Parties, issued by the South African Institute of Chartered Accountants. No transactions are implicated by simply the nature of the existence of the relationship between entities. However, the following transactions were recorded relating to transactions with related parties as defined above:

Name of related party	Nature of the transaction	2012	2011
Income			
Department of Energy	Grant	**35,430,000**	19,954,000
NECSA – Pelindaba	Authorisation fees	**21,709,119**	17,082,995
NECSA – Vaalputs	Authorisation fees	**3,392,049**	2,909,612
Expenses			
NECSA	Sample analysis	**848,648**	974,686

17. Reconciliation of Surplus for the Year to Cash Generated from Operations

	2012 R	2011 R
Operating (deficit)/surplus for the year	**1,254,724**	2,337,095
Non-cash items	**19,969,453**	7,733,874
Depreciations	**4,450,580**	2,308,150
Amortisations	**595,655**	369,880
Write-offs and impairment on property, plant and equipment	**-**	44,370
Loss on disposal	**907,788**	-
Increase in provision for leave pay and bonuses	**5,603,711**	5,691,526
Provision for restructuring	**-**	1,941,885
Provision for doubtful debt	**1,233,719**	1,295,907
(Increase)/ Decrease in provision for retirement medical benefit	**7,178,000**	(3,917,844)
Working capital changes	**(6,259,914)**	(17,033,680)
Decrease/(Increase) in accounts receivables	**265,366**	(9,441,704)
Decrease in provision for leave and bonus	**(7,633,411)**	(5,698,428)
Increase/(Decrease) in accounts payables	**1,108,131**	(1,893,548)
	14,964,263	(6,962,711)

18. Financial Instruments

Financial instruments consist of cash and cash equivalents, trade and other receivables, and trade and other payables.

18.1 Credit risk

Financial assets, which potentially subject the NNR to concentrations of credit risk, consist principally of cash and trade receivables. Trade receivables are presented net of the allowance for doubtful debts. Credit risk with respect to trade receivables is limited owing to the large number of licence holders being dispersed across different industries. Accordingly the NNR has no significant concentration of credit risk.

The carrying amounts of financial assets included in the Statement of Financial Position represent the exposure of the NNR to credit risk in relation to those assets.

Trade and other receivables are managed by applying policies and procedures.
The NNR does have exposure to any single individual licence holder or counter party.

18.2 Interest rate risk

The level of exposure to interest rate fluctuation is very low as NNR does not have debt. The interest on assets is also very limited.

18.3 Fair value of financial instrument

At 31 March 2012 the carrying amounts of cash, accounts receivable and accounts payable approximated their fair values due to the short-term maturities of these assets and liabilities. The net fair value of the assets and liabilities of the NNR are stated below:

Assets		
Cash and cash equivalent	**36,617,312**	63,818,556
Trade and other receivables	**30,367,115**	12,228,794
Liabilities		
Trade and other payables	**23,034,753**	22,233,228
Deferred income	**-**	-
Other financial liability – long-term	**-**	-
Other financial liability – short-term	**-**	16,844,113

19. Special Project

	2012 R	2011 R
Fees received from Eskom	-	3,798,990
Fees paid for the project to consultants	-	(3,798,990)
	-	-

20. Subsequent Events

Subsequent to year end, all the conditions relating to obtain loan finance from ABSA were fulfilled for the purchase of the building from M&T Development which was initially leased. The loan agreement for the bond on the building amounting to R79,000,000 was then signed.

21. Irregular Expenditure and Wasteful Expenditure

21.1 Reconciliation of irregular expenditure

Opening balance	**21,493,004**	6,744,582
Add: Current year irregular expenditure	**5,865,730**	21,493,004
Less: Amounts condoned	**(27,358,734)**	(6,744,582)
Irregular expenditure awaiting condonation	**-**	21,493,004

21.2 Reconciliation of fruitless and wasteful expenditure

Opening balance		
Add: Current year wasteful expenditure	**199,157**	839,206
Less: Amounts condoned	**-**	(837,962)
Unauthorised expenditure current year	**199,157**	1,244

Incident	Disciplinary action or steps taken	R
An additional payment in error was made to Mr Msebenzi. His settlement agreement was paid through the cash book and again through the payroll system due to lack of oversight.	Disciplinary action will be instituted and the expenditure will be reported to National Treasury in terms of TR 9.1.2 as required by the PFMA.	199,157

22. Taxation

The entity is exempted from Income Tax and Value Added Tax (VAT) on grant received and authorisation fees. As a result, any VAT paid by the entity is also non-refundable from SARS.

23. Budget Surplus

	2012 R	2011 R
Reconciliation of budget surplus/deficit with the surplus/deficit in the statement of financial performance		
Income variance against budget	**10,423,017**	
Authorisation fees	**7,504,255**	
Other income	**1,581,934**	
Finance income	**1,336,828**	
Expenditure variance against budget	**(10,977,993)**	
Personnel costs	**(1,510,538)**	
Professional services	**(2,651,427)**	
Operating expenses	**(1,730,735)**	
Administrative expenses	**(2,330,585)**	
Other operating expenditure	**(2,754,708)**	
Net Surplus/deficit as per budget	**(554,976)**	
Budget surplus	**1,809,700**	
Net surplus for year as per statement of financial performance	**1,254,724**	

24. Re-Instatement of Corresponding Figures

During the current financial year the NNR corrected prior year accounting errors. An amount of relating to a lease of photocopiers was incorrectly recognised as a finance lease in the financial statement for the year ended 31 March 2011. The lease should have been recognised as an operating lease in the previous financial year ended 31 March 2011.There were also accruals not recorded in the year ended 31 March 2011.

Statement of financial position effect

The closing balance on the Accumulated surplus as at 31 March 2011 is restated at R47,166,109. It was previously shown at R41,475,157. The difference of R5,690,952 is as result of the net effect of the above correcting transactions.

Accumulated surplus	
Recognition of operating lease	(39,604)
Reversal of finance lease – depreciation of leased assets	42,340
Accruals not recorded	(8,788)
Provision for post-retirement liability	5,687,332
Reversal of finance lease – finance charges	9,672
Net correcting error	**5,690,952**
Property, plant and equipment	
Balance per previous year financial statements	22,049,940
Less: reversal of capitalised leased asset-office equipment	(575,830)
Restated balance	**21,474,110**
Finance lease liability	
Balance per previous year financial statements: non-current liabilities	398,371
Balance per previous year financial statements: current liabilities	189,865
	588,236
Less: reversal of finance lease liability	(588,236)
Restated balance	-

24. Re-Instatement of Corresponding Figures (cont.)

	2011 R
Trade and other payables	
Balance per previous year financial statements	22,224,440
Add: accruals not recorded	8,788
Restated balance	**22,233,228**
Provision for post-retirement liability	
Balances per previous financial statement	
Non current other financial liabilities	2,366,463
Current other financial liabilities	20,164,980
Less over provision of post retirement liability	(5,687,332)
Restated balance	**16,844,111**

25. Contigencies

Other contigencies

Disputes with suppliers

ABSA and Property Fund Managers vs NNR – The NNR has been sued by ABSA bank and Property Fund Managers for rental, due to the NNR's delay in vacating its previous premises. All attempts to settle out of court did not materialise and the matter is before the court.

Disputes with employees

Siphiwe Tshabalala vs Marleze Swanepoel, CCMA and NNR – This is a matter currently under review in the CCMA. The applicant has failed to file the record and to amend its founding papers. The NNR must make a decision whether to wait and see the approach to be followed by the applicant or apply to court to have the review dismissed.

Mashishi and Mwase vs NNR and Sakwe v NNR – an application for consolidation of the three matters relating to dismissal for operational requirements is pending in the Labour Court. Papers have been filed and we await a trial date.

Disputes with other parties

JJ Appelgryn vs NNR and others – The NNR is one of the respondents in a High Court application brought by Appelgryn. Although no order is sought against the NNR, the NNR has been advised to file an opposing affidavit to dispel some of the assertions made against it in the papers. Counsel has been briefed to file the necessary papers.

NNR/Dawson – This is an old litigation matter wherein, following action instituted against it by Dawson, the NNR was successful and obtained a cost order against Dawson. Dawson appealed the decision. The appeal was not opposed as it had lapsed. A proposal was made to Dawson to forego the appeal and each party to pay its own costs. No response was received from Dawson. We await a detailed report from Newtons on this matter.

No estimate amount could be disclosed for all the above transactions as the cases are currently in progress.

Acronyms

AADQ	Annual authorised discharge quantity
ACR	Authorisation change request
ALARA	As low as reasonably achievable
ARPC	Assistant radiation protection controller
ASDPL	Aerodynamic separation process
ASME	American Society of Mechanical Engineers
ASN	French Nuclear Regulatory Authority
CEO	Chief Executive Officer
CNS	Convention on Nuclear Safety
COE	Certificate of exemption
COM	Chamber of Mines
COR	Certificate of registration
CPI	Consumer price index
CSS	Commission on Safety Standards
DIPR	Dedicated isotope production reactor
ECC	Emergency control centre
EPD	Electronic personal dosimeter
DoE	Department of Energy
ENIQ	European Network for Inspection and Qualification
EPSOC	Emergency Planning, Steering and Oversight Committee
FNRBA	Forum of Nuclear Regulatory Bodies in Africa
GRAP	Generally Recognised Accounting Practice
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiation Protection
ICT	Information Communication and Technology
ILT	Initial licence training
INES	International Nuclear Event Scale
INPO	Institute of International Nuclear Power Operations
INSAG	International Nuclear Safety Group (of the IAEA)
ISI	In-service inspection
IT	Information technology
JCC	Joint Co-ordinating Committee
KNPS	Koeberg Nuclear Power Station
LETF	Liquid effluent treatment facility
LEU	Low Enriched Uranium
LLM	Low level waste
LTAM	Long-term asset management
MDEP	Multinational Design Evaluation Programme
mSv	microSievert
mSv	milliSievert
MWe	Megawatt Electrical
Necsa	South African Nuclear Energy Corporation
Nehawu	National Education, Health and Allied Workers Union
NEPROC	Nuclear Emergency Preparedness Regulatory Oversight Committee
NERS	Network of Regulators of Countries with Small Nuclear Programmes
NGO	Non-governmental organisation
NIL	Nuclear installation licence
NNR	National Nuclear Regulator
NNR Act	National Nuclear Regulator Act
NORM	Naturally occurring radioactive material
NTWP	Nuclear technology and waste products
NUSSC	Nuclear Safety Standards Committee
NVL	Nuclear vessel licence
QMS	Quality management system
OTS	Operating technical specification
PBMR	Pebble Bed Modular Reactor
PFMA	Public Finance Management Act
PLEX	Plant life extension
PPC	Parliamentary Portfolio Committee
PSA	Public safety assessor
RASSC	Radiation Safety Standards Committee
RENS	Regulation of Natural Sources
RPO	Radiation Protection Officer
SALTO	Safety assessment of long-term operation
SAPS	South African Police Service
SARS	South African Revenue Service
SAT	Self-assessment tool
SGR	Steam generator replacement
SHEQ	Safety, Health, Environment and Quality Management
SHEQD	Safety, Health, Environment and Quality Management Department
SQEP	Suitably qualified and experienced person
TPU	Thermal power uprate
TRANSSC	Transport Safety Standards Committee
TSO	Technical Support Organisation
US-NRC	United States Nuclear Regulatory Commission
WAC	Waste acceptance criteria
WAASC	Waste Safety Standards Committee
WCA	Wonderfonteinspruit Catchment Area

Notes

National Nuclear Regulator

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RP 125/2012
ISBN No. 978-0-621-40845-4

www.nnr.co.za