Eskom	ADMINISTRATIVE PROCEDURE	Allocation Centre 38A	Reference Number KAA-811	Rev 4
NNR: YES **No.: K-28990-E**	THE INTEGRATED KOEBERG NUCLEAR EMERGENCY PLAN			PAGE 1

KORC	ACCESS	IMPORTANCE CATEGORY	NEXT REVIEW DATE	DATE AUTHORISED
YES	Nuclear Restricted	CSR	2025-12-09	2022-12-09

COMPILED / REVISED	REVIEWED	AUTHORISED
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N CRONJE	A NCURU	M VALAITHAM
EMERGENCY MANAGEMENT SENIOR PHYSICIST	EMERGENCY MANAGEMENT MANAGER	POWER STATION GENERAL MANAGER KNPS (ACTING)
DATE 2022-10-28	**DATE** 2022-10-28	**DATE** 2022-12-09

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FCA	ALARA REVIEW	SUPERSEDES
PROTECTION	NO	KAA-811, Rev 3 dd. 2018-12-28 FULL REVIEW

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1.0 PURPOSE

1.1 This procedure outlines the Integrated Koeberg Nuclear Emergency Plan in terms of Eskom Corporate Standard 238-53. The plan has been derived from National Nuclear Regulator documents and internationally accepted practices to prevent the occurrence of deterministic health effects (direct harmful tissue reactions) in individuals, to reduce the occurrence of stochastic effects (cancer or heritable effects) in the population, to minimise the psychological impact of a nuclear or radiological emergency and to minimise the impact on the environment.

1.2 The objectives of the Integrated Koeberg Nuclear Emergency Plan are:

1.2.1 To establish an organised emergency response capability for timely, co-ordinated action of intervening organisations in an event of a nuclear accident.

1.2.2 To describe the preparedness capabilities, responsibilities and authorities of intervening organisations and a concept for integrating the activities in the interest of public health and safety.

2.0 SCOPE

2.1 The Integrated Koeberg Nuclear Emergency Plan is applicable to:

2.1.1 Any nuclear or radiological emergency that has or is expected to have a radiological effect within or outside the boundaries of the Koeberg Nuclear Power Station that could potentially require an emergency response on-site and/or by government organisations.

2.1.2 Eskom, its agents, those organisations that participate in the maintenance or execution of the Integrated Koeberg Nuclear Emergency Plan and the members of the public that could be directly affected by a nuclear incident or nuclear accident at the Koeberg Nuclear Power Station.

2.1.3 Any emergency that involves the transport (by land, sea or air) of radioactive material that the Koeberg Nuclear Power Station is responsible for.

2.1.4 Any nuclear or radiological emergency that possess a risk to health, safety, or welfare of workers on site, the public or which could potentially cause damage to property serving a nuclear safety function.

3.0 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

3.1.1 **Accident** – Any unintended event, including operating errors, equipment failures or other mishaps, the consequences, or potential consequences of which are not negligible from the point of view of protection or safety.

3.1.2 **Action** – means:

(a) the use, possession, production, storage, enrichment, processing, reprocessing, conveying or disposal of, or causing to be conveyed, radioactive material.

(b) any action, the performance of which may result in persons accumulating a radiation dose resulting from exposure to ionising radiation; or

(c) any other action involving radioactive material.

3.1.3 **Action Level** – The level of dose rate or activity concentration above which remedial actions or protective actions should be carried out in chronic exposure or emergency exposure situations.

3.1.4 **Arrangements (for emergency response)** – The integrated set of infrastructural elements necessary to provide the capability for performing a specified function or task required in response to a nuclear or radiological emergency. These elements may include authorities and responsibilities, organisation, coordination, personnel, plans, procedures, facilities, equipment, or training.

3.1.5 **Assessment** – The process and the result, of analysing systematically the hazards associated with sources and actions, and associated protection and safety measures, aimed at quantifying performance measures for comparison with criteria

3.1.6 **Avertable Dose** – A dose to be avoided by a protective action i.e., the difference between the dose expected with the protective action and that to be expected without the protective action.

3.1.7 **Contamination** – The presence of radioactive substances in or on a material or the human body, or other place where they are undesirable or could be harmful.

3.1.8 **Control** – The function or power or (usually as controls) means of directing, regulating, or restraining.

3.1.9 **Decontamination** – The removal or reduction of contamination by a physical or chemical process.

3.1.10 **Deterministic Effect** – A radiation effect for which generally a threshold level of dose exists above which the severity of the effect is greater for a higher dose.

3.1.11 **Disaster** – A progressive or sudden, widespread, or localised, natural or human-caused occurrence which:

(a) Causes or threatens to cause:

(i) death, injury or disease;

(ii) damage to property, infrastructure or the environment; or

(iii) disruption of the life of a community; and

(b) Is of the magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources.

3.1.12 **Disaster Coordinating Team** – A multidisciplinary team convened at the Disaster Operations Centre, under direction of the Head: DRMC or the Duty Coordinator: DOC, that is responsible for the implementation of public protective actions and other response actions during a nuclear or radiological emergency, and for assisting the Joint Decision-making Team with protective action decision. This team includes representatives across all three spheres of government and the private and voluntary sectors, as required.

3.1.13 **Disaster Management** – means a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at:

(a) preventing or reducing the risk of disasters.

(b) mitigating the severity or consequences of disasters.

(c) emergency preparedness.

(d) a rapid and effective response to disasters; and

(e) post-disaster recovery and rehabilitation.

3.1.14 **Disaster Operations Centre** – Means the Operations Centre established by the City of Cape Town Disaster Risk Management in terms of the Disaster Management Act, 2002 (Act No. 57 of 2002) and the Disaster Management Amendment Act, 2015 (Act No. 16 of 2015). The Disaster Operations Centre is situated in Goodwood.

3.1.15 **Disaster Risk Management Centre** – Means a centre established by die City of Cape Town administration in terms of section 43 of the Disaster Management Act, Act 57 of 2002, to oversee all disaster risk reduction, response, relief, and rehabilitation activities.

3.1.16 **Disaster Risk Management Plan** – A document describing the organisational structure, its roles and responsibilities and concept of operation covering all aspects of the Disaster Risk Management Continuum and placing an emphasis on measures that reduce vulnerability, viz. hazard identification, risk and vulnerability assessment, risk reduction and mitigation, emergency planning and emergency preparedness, emergency response, relief, and recovery efforts.

3.1.17 **Dose** – The amount of radiation received, where the use of a more specific term such as “effective dose” or “equivalent dose” is not necessary for defining the quantity of interest.

3.1.18 **Dose Limit** – The value of effective dose or equivalent dose to individuals from actions authorised by a nuclear installation licence, nuclear vessel licence or certificate of registration, that must not be exceeded.

3.1.19 **Effective Dose** – A summation of the tissue or equivalent doses, each multiplied by an appropriate tissue-weighting factor. Effective dose is a measure of dose designed to reflect the amount of radiation detriment likely to result from the dose. The SI unit for effective dose is joule per kilogram (J/kg), termed the sievert (Sv).

3.1.20 **Emergency** – An event that requires the prompt implementation of actions, or the special regulation of persons or property, to limit the risk to the health, safety, or welfare of people, or to limit damage to property or the environment.

3.1.21 **Emergency Exposure Situation** – A situation of exposure that arises as a result of an accident, a malicious act or other unexpected event, and requires prompt action in order to avoid or to reduce adverse consequences.

3.1.22 **Emergency Plan** – A document describing the organisational structure, it's roles and responsibilities, concept of operation, means and principles for intervention during an emergency.

3.1.23 **Emergency Planning** – The process of developing and maintaining the capability to take actions that should mitigate the impact of an emergency on persons, property, or the environment.

3.1.24 **Emergency Planning Zones** – Emergency planning zones are the areas where the risk warrants the development of arrangements for protective actions. Ideally, emergency planning zones are identified using natural boundaries. Emergency planning zones include, for example, the precautionary action zone, the urgent protective action planning zone, and the longer-term protective action planning zone.

3.1.25 **Emergency Preparedness** – The capability to promptly take actions that must effectively mitigate the impact of an emergency on persons, property, or the environment.

3.1.26 **Emergency Procedures** – A set of documents describing the detailed actions to be taken by response personnel during an emergency.

3.1.27 **Emergency Response** – The performance of actions to mitigate the impact of an emergency on persons, property, or the environment.

3.1.28 **Emergency Sampling** – Samples of only water, soil, grass, and air/iodine, which are taken to determine the geographical distribution of contamination in the environment.

3.1.29 **Eskom** – Eskom Holdings SOC Ltd, its divisions and wholly owned subsidiaries.

3.1.30 **Evacuation** – The rapid, temporary removal of people from the area to avoid or reduce short-term radiation exposure in the event of an emergency.

3.1.31 **Exercise** – An evaluation of major portions of emergency response capabilities. An exercise tests the integrated capability of the emergency response organisation, to identify weaknesses that could affect the emergency response to an actual emergency.

3.1.32 **Existing Exposure Situation** – An existing exposure situation is a situation of exposure that already exists when a decision on the need for control needs to be taken. Existing exposure situations include exposure to natural background radiation that is amenable to control; exposure due to residual radioactive material that derives from past practices that were never subject to regulatory control; and exposure due to residual radioactive material deriving from a nuclear or radiological emergency after an emergency has been declared to be ended.

3.1.33 **Exposure** – The act or condition of being subject to irradiation. Exposure may be either external exposure (irradiation by sources outside the body) or internal exposure (irradiation by sources inside the body). Exposure may be classified as either normal exposure or potential exposure, either: occupational, medical, or public exposure and in intervention situations, either emergency exposure or chronic exposure. The term exposure is also used in radio-dosimetry to express the amount of ionisation produced in air by ionising radiation.

3.1.34 **Generic Intervention Level** – The level of avertable dose at which a specific protective action or remedial action is taken in an emergency exposure situation, or a chronic exposure situation.

3.1.35 **Hazard** – A situation with a potential for human injury, damage to property, damage to the environment, or some combination of these.

3.1.36 **Head of the Disaster Risk Management Centre** – A person appointed to have responsibilities of the head of a municipal disaster management centre as contemplated in section 45 of the Disaster Management Act, Act 57 of 2002.

3.1.37 **Intervening Organisation** – An organisation designated, or otherwise recognised by the government as being responsible for managing or implementing any aspect of an intervention; a list of intervening organisations is provided in Appendix 15.

3.1.38 **Intervention** – Any action intended to reduce or avert exposure or the likelihood of exposure to a release which is not part of a controlled action, or which is out of control as a result of a nuclear accident.

3.1.39 **Intervention Level** – The level of avertable dose at which a specific protective action or remedial action is taken in an emergency exposure situation or chronic exposure situation.

3.1.40 **Iodine Thyroid Blocking** – The ingestion of a compound of stable iodine (usually potassium iodate) to prevent or reduce the uptake of radioactive isotopes of iodine by the thyroid in the event of a nuclear accident involving radioactive iodine.

3.1.41 **Ionising Radiation** – Particle or electromagnetic energy emission, emitted from radioactive material and capable of directly or indirectly producing ions while passing through matter.

3.1.42 **Joint Decision-making Team** – A team convened at the Disaster Operations Centre, under direction of the Head: DRMC or the Duty Coordinator: DOC, consisting of senior representatives of the Department of Mineral Resources and Energy's Nuclear Liability, Safety and Emergency Management directorate, Western Cape Government Disaster Management and City of Cape Town Disaster Risk Management and any other representative from the three spheres of government co-opted into the team. The Joint Decision-making team is responsible for deciding on and ordering public protective actions and other off-site response actions.

3.1.43 **Koeberg** – When used as a prefix to a position title, structure, or component it implies that the organisational position, structure, or component in question directly supports the operation of Koeberg Nuclear Power Station. When used free-standing it refers to Koeberg Nuclear Power Station.

3.1.44 **Koeberg Nuclear Power Station** – Is the nuclear installation as defined in the Koeberg Safety Analysis Report.

3.1.45 **Longer Term Protective Action Planning Zone** – The pre-designated area around KPNS in which contingency plans and procedures are in place for taking effective protective actions to reduce the long-term exposure due to deposited radionuclides in the event of a nuclear accident.

3.1.46 **Monitoring** – The continuous or periodic measurement of radiological and other parameters or determination of the status of a system.

3.1.47 **National Executive** – National executive is the head of the Cabinet of South Africa – the President of South Africa.

3.1.48 **Notification** – Actions taken to inform or alert relevant parties or organizations as part of emergency response.

3.1.49 **Nuclear** – The term nuclear is used to designate actions that are directly related to the nuclear fuel cycle. In most cases, this refers to nuclear power reactors.

3.1.50 **Nuclear Accident** – Any occurrence or succession of occurrences having the same origin and resulting in an unintended/unauthorised exposure to ionising radiation or release of radioactive material, which is capable of giving rise to an effective dose in excess of 1 mSv to the public off-site in a year, or in excess of 50 mSv to a worker on site received essentially at the time of the event.

3.1.51 **Nuclear Damage –** Means:

(a) any injury to or the death or any sickness or disease of a person; or

(b) other damage, including any damage to or any loss of use of property or damage to the environment, which arises out of, or results from, or is attributable to, the ionising radiation associated with KNPS.

3.1.52 **Nuclear Disaster** – A nuclear accident which results in the declaration of a national disaster.

3.1.53 **Nuclear Incident** – Any unintended event which is reasonably capable of giving rise to an effective dose equal to or in excess of 0,1 mSv to the public off site received essentially at the time of the event, or the unintended spread of radioactive contamination or exposure to ionising radiation, which could reasonably give rise to an effective dose in excess 20 mSv to a worker on site received essentially at the time of the event, or significant failure of safety provisions.

3.1.54 **Nuclear Installation** – A facility, installation, plant, or structure designed or adapted for, or which may involve the carrying out of any process, other than the mining and processing of ore, within the nuclear fuel cycle involving radioactive material, or any facility, installation, plant, or structure declared to be a nuclear installation in terms of section 2(3) of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999).

3.1.55 **Nuclear or Radiological Emergency** – An emergency in which there is, or is perceived to be a hazard due to:

(a) The energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction; or

(b) Radiation exposure.

3.1.56 **Off-Site** – The area beyond the public exclusion boundary of Koeberg Nuclear Power Station.

3.1.57 **On-Site** – The area within the public exclusion boundary of Koeberg Nuclear Power Station and adjoining farm, Kleine Springfontein No. 33 to the North, which is also owned by Eskom.

3.1.58 **Operational Intervention Levels (OIL)** – A calculated value (e.g., ambient dose rate or radionuclide concentration) that may be measured by instruments and that corresponds to a certain generic intervention level for a given protective action. Operational intervention levels differ from “intervention levels”, which are expressed in terms of dose that may be averted. Dose may be calculated from dose rate or from activity concentration.

3.1.59 **Operations Support Centre** – An onsite emergency team operating in a location separate from the control room and the Technical Support Centre (TSC), where specific emergency response support personnel will assemble to provide a location from where in-plant operations support (damage control) can be coordinated during an emergency.

3.1.60 **Optimise or Optimisation** – The process of determining what level of protection and safety would result in the magnitude of individual doses, the number of individuals (workers and members of the public) subject to exposure and the likelihood of exposure being “as low as reasonably achievable, economic and social factors being taken into account” (ALARA).

3.1.61 **Plant** – Nuclear power station with associated components, machinery, equipment, or devices.

3.1.62 **Precautionary Action Zone** – An area around a facility for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to reduce the risk of severe deterministic health effects off the site. Protective actions within this area are to be taken before or shortly after a release of radioactive material or an exposure based on the prevailing conditions at the facility. For definition of the Koeberg Precautionary Action Zone see Section 7.8.

3.1.63 **Private and Voluntary Sectors** – Any organisational entity that is not an organ of state (as defined in section 239 of the South African Constitution) but who may be co-opted to assist with the emergency response during a nuclear or radiological emergency.

3.1.64 **Protective Action** – An action for the purposes of avoiding or reducing doses that might otherwise be received in a nuclear or radiological emergency.

3.1.65 **Public Exclusion Boundary** – The enclosure of Eskom controlled property on which KNPS is constructed, and which is a section of Cape Farm No. 1552, also known as Duynefontein. The boundary runs along the coastline on the west and along the boundary of dormitory town of Duynefontein to the south. On the east the R27 national route (known as the West Coast Road) is the boundary. On the north the boundary is the Kleine Springfontein Farm No. 33. Members of the public are not permitted domicile, for any reason, within this area.

3.1.66 **Radiation** – Radiation in this context refers to ionising radiation.

3.1.67 **Radiation Protec**tion – The protection of people, property, and the environment from harmful effects of exposure to ionising radiation, and the means for achieving this.

3.1.68 **Radiological** – The term radiological is used to designate radiation practices other than those that are directly related to the nuclear fuel cycle.

3.1.69 **Recovery** – Longer-term actions to protect the public and the environment against the residual hazards from a nuclear accident and the long-term measures to rehabilitate the population, the community infrastructure, and the environment.

3.1.70 **Release** – The controlled or accidental discharge of radioactive substances into the environment, which may occur during nuclear or radiological actions.

3.1.71 **Risk** – (qualitatively expressed) the probability of a specified health effect occurring in a person or group as a result of exposure to ionising radiation or (quantitatively expressed) a multi-attribute quantity expressing hazard, danger, or chance of harmful or injurious consequences associated with actual or potential exposures relating to quantities such as the probability that specific deleterious consequences may arise and the magnitude and character of such consequences.

3.1.72 **Risk Assessment** – Assessment of the radiological risks associated with normal operation and potential accidents involving a source or action.

3.1.73 **Safety Assessment** – An analysis to evaluate the performance of an overall system and its impact, where the performance measure is radiological impact or some other global measure of impact on safety.

3.1.74 **Severe Accidents** – This term is used to designate nuclear accident conditions that are more severe than design basis accidents. Design basis nuclear accidents are those considered in the design of a facility according to established design criteria, and for which releases of radioactive material are kept within specified limits.

3.1.75 **Sheltering** – A protective action whereby members of the public are advised to stay indoors with windows and doors closed, intended to reduce their exposure in an emergency exposure situation.

3.1.76 **Source** – Anything that may cause radiation exposure, such as by emitting ionising radiation or by releasing radioactive substances or radioactive material and may be treated as a single entity for safety purposes.

3.1.77 **Stochastic Effect** – A health effect, the probability of occurrence of which is greater for a higher radiation dose and the severity of which (if it occurs) is independent of dose and generally occurs without a threshold.

3.1.78 **Urgent Protective Action Planning Zone** – An area around a facility for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to avert doses off the site in accordance with international safety standards. Protective actions within this area are to be taken based on environmental monitoring – or as appropriate, prevailing conditions at the facility. For definition of the Koeberg Urgent Protective Action Planning Zone see Section 7.8.

3.1.79 **Urgent Protective Actions** – Those actions that must be taken promptly in order to be effective, and the effectiveness of which would be markedly reduced by delay. These include sheltering, evacuation, and distribution of iodine.

3.1.80 **Worker –** Any person who works, whether full time, part time or temporarily, for an employer and who has recognised rights and duties in relation to occupational radiation protection.

3.2 Abbreviations

3.2.1 **CCT** – City of Cape Town

3.2.2 **DCT** – Disaster Coordinating Team

3.2.3 **DMA** – Disaster Management Act, 2002 (Act No. 57 of 2002), including Disaster Management Amendment Act, 2015 (Act No. 16 of 2015)

3.2.4 **DMRE** – Department of Mineral Resources and Energy

3.2.5 **DOC** – CCT Disaster Operations Centre

3.2.6 **DRM** – Disaster Risk Management

3.2.7 **DRMC** – Disaster Risk Management Centre

3.2.8 **EC** – Emergency Controller

3.2.9 **EDF** – Electricité de France (a public limited company)

3.2.10 **EM** – Emergency Management

3.2.11 **EMS** – Emergency Medical Service / METRO (Western Cape Government)

3.2.12 **ENF** – Emergency Notification Form (KFG-EG-002)

3.2.13 **EP** – Emergency Plan

3.2.14 **EPSOC** – Emergency Planning and Oversight Committee

3.2.15 **ESL** – Environmental Survey Laboratory

3.2.16 **FAO** – Food and Agriculture Organisation of the United Nations

3.2.17 **GIS** – Geographic Information System

3.2.18 **HVCR** – High Voltage Control Room

3.2.19 **IAEA** – International Atomic Energy Agency

3.2.20 **INPO** – Institute of Nuclear Power Operators

3.2.21 **JDT** – Joint Decision-making Team

3.2.22 **KNPS** – Koeberg Nuclear Power Station

3.2.23 **KSSR** – Koeberg Site Safety Report

3.2.24 **LPZ** – Longer Term Protective Action Planning Zone

3.2.25 **NDMC** – National Disaster Management Centre

3.2.26 **NECSA** – South African Nuclear Energy Corporation

3.2.27 **NNR** – National Nuclear Regulator

3.2.28 **OSC** – Operations Support Centre

3.2.29 **PAZ** – Precautionary Action Zone

3.2.30 **PEB** – Public Exclusion Boundary

3.2.31 **PECC** – Public Emergency Communication Centre (107 Centre)

3.2.32 **RNET** – Regional Nuclear Emergency Team

3.2.33 **RP** – Radiation Protection

3.2.34 **RRR** – Radiological Release Response Plan

3.2.35 **SABC** – South African Broadcasting Corporation

3.2.36 **SPCA** – Society for the Prevention of Cruelty to Animals

3.2.37 **TLD** – Thermoluminescent Dosimeter

3.2.38 **TRCF** – Tygerberg Radiation Casualty Facility

3.2.39 **TSC** – Technical Support Centre

3.2.40 **UPZ** – Urgent Protective Action Planning Zone

3.2.41 **WANO** – World Association of Nuclear Operators

3.2.42 **WCG** – Western Cape Government

4.0 REFERENCES

4.1 Referenced Documents

The following referenced documents were used during the development of this document. Although listed, the referenced documents are not mandatory requirements. Parties using this document must apply the most recent edition of the documents listed below, unless otherwise specified in the applicable statutory and regulatory requirements.

4.1.1 238-53, Rev 0b: Emergency Preparedness and Response Requirements for Nuclear Installations

4.1.2 335-2, Rev 5: Koeberg Nuclear Power Station Management Manual

4.1.3 36-197, Rev 2: Koeberg Licencing Basis Manual

4.1.4 CCT DRM Plan - T8: Koeberg Nuclear Power Station Radiological Release Hazard Disaster Risk Management Plan (Rev. 1)

4.1.5 Disaster Management Act, 2002 (Act No. 57 of 2002)

4.1.6 Disaster Management Amendment Act, 2015 (Act No. 16 of 2015)

4.1.7 IAEA: GSR Part 7: Preparedness and Response for a Nuclear or Radiological Emergency, November 2015

4.1.8 KAA-500, Rev 14: The Process for Controlled Documents

4.1.9 Koeberg Safety Analysis Report, Part III Chapter 4.2, Revision 5

4.1.10 KSA-011, Rev 14: The Requirements for Controlled Documents

4.1.11 KSAR: Koeberg Safety Analysis Report, Rev 5

4.1.12 KSSR: Koeberg Site Safety Report, Rev 1

4.1.13 Letter k12131.1N: Technical Basis for the Koeberg Emergency Plan, February 2005

4.1.14 Letter k12131: Technical Basis for the Koeberg Emergency Plan, July 2000

4.1.15 Memorandum of Agreement between Eskom Holdings, Western Cape Government and the City of Cape Town, Revision 1

4.1.16 National Disaster Risk Management Framework, 2005

4.1.17 National Nuclear Disaster Management Plan, October 2005

4.1.18 National Nuclear Regulator Act, 1999 (Act No. 47 of 1999)

4.1.19 NNR RD-014, Rev 0: Emergency Preparedness and Response Requirements for Nuclear Installations

4.1.20 Nuclear Installation License NIL-01 (current variation)

4.1.21 Regulations on safety standards and regulatory practices, No. R.388, Government Gazette No. 28755, 28 April 2006.

4.2 Applicable Documents

The following applicable documents contain provisions that, through reference in the text, are to be used in supporting the implementation of the document. Parties using this document must apply the most recent edition of the documents listed below, unless otherwise specified in the applicable statutory and regulatory requirements.

4.2.1 240-164300781: NOU External Communication Strategy

4.2.2 KAA-583: The Provision and Application of First Aid and Emergency Care

4.2.3 KAA-611: Emergency Mustering Accountability and Evacuation

4.2.4 KAA-723: The Standby Organisation of Koeberg Nuclear Power Station

4.2.5 KAA-769: Security Incident Response Plan

4.2.6 KAG-001: Emergency Exercise Management and Assessment

4.2.7 KAG-002: Koeberg Emergency Plan Training Programme Guide

4.2.8 KAG-003: Maintenance and Inventory Control of Emergency Management Facilities and Equipment

4.2.9 KAG-004: Administration, Control and Distribution of Emergency Plan Procedures, Forms and Checklists

4.2.10 KAG-006: Koeberg Meteorological Programme

4.2.11 KEP-002: Nuclear Emergency Plan Notifications and Call-Outs

4.2.12 KEP-004: Emergency Duties of the Transport Official

4.2.13	KEP-010:	Emergency Plan Radiological Surveys
4.2.14	KEP-014:	Emergency Planning – Meteorological Support
4.2.15	KEP-017:	Thyroid Protection by Potassium Iodate
4.2.16	KEP-020:	Assessment of Radioiodine in the Human Thyroid
4.2.17	KEP-024:	Protective Actions and Intervention Levels
4.2.18	KEP-033:	Emergency Communication with Media and Employees
4.2.19	KEP-035:	Radiation Protection Dosimetry Services Emergency Preparedness and Response Duties
4.2.20	KEP-036:	Health Physics Controller Duties
4.2.21	KEP-038	Administrative and Logistical Support During an Emergency
4.2.22	KEP-041:	Duties of Field Team Leader
4.2.23	KEP-042:	Emergency Plan Duties for Security Staff
4.2.24	KEP-056:	Nuclear Emergency Plan Duties of the Operating Shift
4.2.25	KEP-060:	Duties of the Emergency Controller
4.2.26	KEP-063:	Technical Support Centre Emergency Duties
4.2.27	KEP-065:	Off-Site Radiological Calculations
4.2.28	KEP-073:	Oil Spill at Sea Response Plan
4.2.29	KEP-076:	Nuclear Emergency Plan Duties of Radiation Protection Operations Staff
4.2.30	KEP-084:	Chemical Spill Response Plan
4.2.31	KEP-086:	Emergency Plan for Radwaste Transport to Vaalputs
4.2.32	KEP-087:	Medical Response to a Radiological Accident or Incident
4.2.33	KEP-088:	Emergency Affecting Spent Fuel in Storage Racks
4.2.34	KEP-089:	Emergency Response to a Spent Fuel Pool Incident
4.2.35	KEP-091:	Marine Infestation Threat Response
4.2.36	KEP-092:	Procedure for Regional Nuclear Emergency Plan
4.2.37	KEP-094:	Emergency Communication System

4.2.38 KEP-095: Duties and Operation of the Operations Support Centre

4.2.39 KEP-I-001: Operating Instruction for the Off-Site Public Warning System

4.2.40 KEP-I-002: Operating Instructions for Emergency Plan Communication Equipment

4.2.41 KEP-I-006: ESL Operation following Emergency Plan Activation

4.2.42 KEP-I-007: Collection of Post-Accident Environmental Samples

4.2.43 KEP-I-008: Maintenance and Control of The Emergency Telephone Directory

4.2.44 KEP-I-010: Set-Up of the Alternate ESL for Emergency Plan Duties

4.2.45 KEP-I-012: Iodine Filter Standby Fans ACP 2 Basement

4.2.46 KEP-I-013: Computer Based Radiological Programmes for use by the Nuclear Emergency Plan

4.2.47 KEP-I-014: Operation, Use and Availability of Emergency Plan Portable Instrumentation and Equipment

4.2.48 KEP-I-016: Operating Instruction for the Digital Paging System

4.2.49 KGG-001: Response to Severe Natural Phenomena

4.2.50 KGG-002: Guidelines for the Control of Secondary Contamination Following a Steam Generator Tube Rupture

4.2.51 KGG-005: Koeberg Off-site Infrastructure Decontamination Guide

4.2.52 KGG-006: Revision of the Relocation Operation Intervention Level (OIL 4)

4.2.53 RRR 7.2.1: Notification & Stand Down of a Nuclear Incident / Accident

4.2.54 RRR 7.2.2: City of Cape Town Disaster Operations Centre

4.2.55 RRR 7.2.3: Head: Disaster Risk Management Centre

4.2.56 RRR 7.2.4: Duty Disaster Risk Management Coordinator

4.2.57 RRR 7.2.5: Zone Coordinator

4.2.58 RRR 7.2.6: Sub Zone Coordinator

4.2.59 RRR 7.2.7: Disaster Coordinating Team

4.2.60 RRR 7.2.8: Traffic Services, Metropolitan Police Department and Law Enforcement

4.2.61 RRR 7.2.9: Environmental Health

4.2.62 RRR 7.2.10: WCG: Department of Environmental Affairs & Development Planning

4.2.63 RRR 7.2.11: Fire and Rescue

4.2.64 RRR 7.2.12: Emergency Medical Services

4.2.65 RRR 7.2.13: SPCA - Animal Evacuation and Relocation

4.2.66 RRR 7.2.14: South African Police Services

4.2.67 RRR 7.2.15: South African National Defence Force

4.2.68 RRR 7.2.16: Golden Arrow and MyCiti Bus Services

4.2.69 RRR 7.2.17: Robben Island

4.2.70 RRR 7.2.18: Tourism and Embassy Liaison

4.2.71 RRR 7.2.19: Social Development - Rendering Services to People with disabilities

4.2.72 RRR 7.2.20: Federal Siren and Public Warning System

4.2.73 RRR 7.2.21: Public Notification/Protective Action Announcements Using Vehicle Mounted Siren/Public Address (PA) Systems in Specified Zones

4.2.74 RRR 7.2.22: Media Liaison

4.2.75 RRR 7.2.23: South African Broadcasting Corporation

4.2.76 RRR 7.2.24: Technical Telecommunications

4.2.77 RRR 7.2.25: Potassium Iodate Distribution Control

4.2.78 RRR 7.2.26: Radioactive Contamination Monitoring Equipment

4.2.79 RRR 7.2.27: Personal Decontamination

4.2.80 RRR 7.2.28: Staff Safety and Welfare

4.2.81 RRR 7.2.29: Food Ban and Control of Foodstuff

4.2.82 RRR 7.2.30: Protective Clothing and Logistical Support

4.2.83 RRR 7.2.31: Traffic and Transport Management

4.2.84 RRR 7.2.32: Sheltering

4.2.85 RRR 7.2.33: Evacuation and Relocation

4.2.86 RRR 7.2.34: Mass Care Centres -Temporary Relocation

4.2.87 RRR 7.2.37: Traffic Evacuation Model

4.2.88 RRR 7.2.38: Development Applications

4.2.89 RRR 7.2.39: NNR On-Line Radiation Monitoring Stations

4.2.90 RRR 7.2.40: Nuclear Vessels

4.2.91 RRR 7.2.41: Emergency Exercises

4.2.92 RRR 7.2.42: Training

4.2.93 RRR 7.2.43: Audit and Record Retention

4.2.94 WCG Tygerberg Radiation Casualty Facility Manual: “Treatment of Radiation Casualty Patients at Medical Facilities in the event of a Radiological or Nuclear Event”

5.0 SAFETY ASSESSMENT

5.1 The scope of the Integrated Koeberg Nuclear Emergency Plan and extent of the planning zones are based on the Koeberg Emergency Plan Technical Basis, approved and issued by the NNR via letter k12131.1N (dated 28 February 2005) and on the legal requirements contained in the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999) and the Disaster Management Act, 2002 (Act No. 57 of 2002) and the Disaster Management Amendment Act, 2015 (Act No. 16 of 2015) .The overall Integrated Koeberg Nuclear Emergency Plan is based on the abovementioned legislation, relevant regulations and NNR requirements.

6.0 ADMINISTRATIVE REQUIREMENTS

6.2.1 The Integrated Koeberg Nuclear Emergency Plan is based on the requirements prescribed in NNR Requirements Document RD-014 and the Eskom Standard, 283-53.

6.2.2 Arrangements to implement the Integrated Koeberg Nuclear Emergency Plan via procedures and sufficient trained resources are formalised via a Memorandum of Agreement entered into by Eskom Holdings SOC Ltd, the Western Cape Government and the City of Cape Town.

7.0 EMERGENCY PREPAREDNESS

7.1 Authority

Appendix 1 and section 7.2 lists the persons or positions who have the authority to make prompt decisions regarding the activation of nuclear or radiological emergency plans and the implementation of protective actions in terms of the national legislation and National Nuclear Disaster Management Plan.

7.2 Organisational Responsibilities

NOTE: *Many responsibilities listed below are intended to be descriptive and not prescriptive, i.e., responsibilities already outlined in existing legislation.*

7.2.1 As per legislation the National Executive is primarily responsible for the co-ordination and management of any national disaster and must deal with such a disaster in terms of existing legislation and contingency arrangements. The obligations of the National Executive must be serviced by the relevant officials and infrastructure of the three spheres of government.

7.2.2 As per legislation the National Disaster Management Centre is responsible to declare a Local, or Provincial or National Disaster on the recommendation of the Head of the CCT Disaster Risk Management Centre in consultation with the Joint Decision-making Team in the event of a General Emergency being declared at Koeberg Nuclear Power Station.

7.2.3 As per legislation the Cabinet member designated by the President to administer the Disaster Management Act, 2002 (Act No. 57 of 2002) and the Disaster Management Amendment Act, 2015 (Act No. 16 of 2015) may declare a national state of disaster if existing legislation and contingency arrangements are inadequate to effectively deal with a disaster or other special circumstances warrant the declaration of a national state of disaster. The designated Cabinet member may then, after consultation with the responsible Cabinet members, make regulations or issue directions or authorise the issue of directions concerning the release of national resources, personnel, etc.

7.2.4 As per legislation the Minister of Mineral Resources and Energy makes regulations related to nuclear or radiological emergency planning and must assume a leading role in the National Executive's oversight during a nuclear disaster. The Minister is responsible to address claims more than the financial security provided by the holder of the nuclear authorization in accordance with the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999).

7.2.5 The Chief Directorate: Nuclear Safety and Technology in the Department of Mineral Resources and Energy (DMRE) is specifically responsible to service the following DMRE obligations regarding nuclear disaster management and emergency response:

(a) Service the obligations of the Minister of Mineral Resources and Energy regarding nuclear or radiological emergency planning matters under the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999).

(b) Ensure compliance with the Disaster Management Act, 2002 (Act No. 57 of 2002) and the Disaster Management Amendment Act, 2015 (Act No. 16 of 2015) regarding the obligations of the National Organ of State to prepare and maintain a National Nuclear Disaster Management Plan and coordinate its implementation.

(c) Ensure establishment and chair the Nuclear Emergency Planning Steering and Oversight Committee (EPSOC) meetings relating to the Koeberg Nuclear Power Station as per the formal Terms of Reference.

(d) Ensure that the DMRE participates in the Disaster Coordinating Team and the Joint Decision-making Team.

(e) Responsible for joint decision making, joint co-ordination and joint management of post-disaster recovery and rehabilitation with the City of Cape Town, and the Western Cape Government; with the necessary input from the Koeberg Nuclear Power Station and the National Nuclear Regulator.

(f) Responsible for notifying, through official channels, South Africa's bordering States about a nuclear or radiological emergency as required.

7.2.6 The Western Cape Government, within its area of jurisdiction, is responsible to establish, maintain and implement a Provincial Nuclear Disaster Management Plan for dealing with the off-site effects of a nuclear or radiological emergency arising from the Koeberg Nuclear Power Station and for maintaining a Provincial Disaster Management Centre.

The relevant department / intervening organisation of the Western Cape Government is responsible for maintaining their resources required by the Integrated Koeberg Nuclear Emergency Plan in a state of readiness

A representative from the Western Cape Government must participate in the Disaster Coordinating Team and the Joint Decision-making Team after the declaration of a nuclear or radiological emergency at the Koeberg Nuclear Power Station.

In accordance with legislation in the event of a provincial disaster, the Premier of the Western Cape, after consultation with the other members of the executive council of the Western Cape, may, by notice in the Provincial Gazette, declare a provincial state of disaster

7.2.7 The City of Cape Town, within its area of jurisdiction, is responsible to establish, maintain and implement a Municipal Nuclear Disaster Management Plan for dealing with the off-site effects of a nuclear or radiological emergency arising from the Koeberg Nuclear Power Station and to maintain a Municipal Disaster Management Centre.

The relevant department / intervening organisation of the City of Cape Town is responsible for maintaining their resources required by the Integrated Koeberg Nuclear Emergency Plan in a state of readiness.

In accordance with legislation in the event of a local disaster the council of a municipality having primary responsibility for the co-ordination and management of the disaster may, by notice in the Provincial Gazette, declare a local state of disaster

7.2.8 Eskom is responsible for covering the cost for the establishment, implementation, and management of the Integrated Koeberg Nuclear Emergency Plan in so far as it relates the Koeberg Nuclear Power Station.

Eskom is responsible for providing financial security to cover the potential consequences of a nuclear accident as per relevant legislation and regulations.

The obligation of “prevention” under the Disaster Management Act, 2002 (Act No.57 of 2002) and the Disaster Management Amendment Act, 2015 (Act No. 16 of 2015) is addressed by the Koeberg Nuclear Power Station through the implementation of the statutory and regulatory requirements.

7.2.9 As per the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999) the National Nuclear Regulator ensures that the Integrated Koeberg Nuclear Emergency Plan is effective for the protection of persons should a nuclear accident occur.

7.2.10 The Head of the DRMC and/or the Duty DRM Coordinator is a member of the Disaster Coordinating Team and the Joint Decision-making Team; and is responsible, with concurrence of the Joint Decision-making Team and in consultation with the Disaster Coordinating Team, for evaluating and ordering the Public Protective Actions recommended by the Koeberg Emergency Controller.

7.2.11 The members of the Disaster Coordinating Team (DCT) are responsible for the implementation of public protective actions and other response actions during a nuclear or radiological emergency. The DCT is also responsible for providing advice to the Joint Decision-making Team regarding protective actions. The DCT includes representatives across all three spheres of government and the private and voluntary sectors, as required. Representatives of intervening organisations make up the majority of the Disaster Coordinating Team.

7.2.12 The members of the Joint Decision-Making Team (JDT) are responsible for evaluating and ordering public protective actions and other response actions in a nuclear or radiological emergency.

7.2.13 The Department of Arts and Culture is the organisation responsible for the Robben Island Museum. The Safety Officer appointed by this department for the island is responsible, under the direction of the Disaster Operations Centre, for the protection of the population and the implementation of Protective Actions within the area of his/her jurisdiction.

7.2.14 The South African Broadcasting Corporation, Sea Point, is responsible for the provision of emergency radio broadcasting services to support the implementation of protective actions via public notification and communication.

7.2.15 The South African Nuclear Energy Corporation (NECSA) acts as the National Competent Authority and Contact Point (24-hour Emergency Control Centre) for the following International Atomic Energy Agency Conventions:

- Convention on early notification of a nuclear accident.
- Convention on assistance in the case of a nuclear accident or radiological emergency.

7.2.16 Where applicable, other National Departments and Institutions must be involved as appropriate in terms of their legislation, functions and as directed in terms of a state of National Disaster.

7.2.17 In terms of the international Conventions, the IAEA should inform and provide information to any State party to the Conventions. On request from South Africa the IAEA should also provide assistance in case of a nuclear or radiological emergency; or the IAEA may request assistance from South Africa in case of a nuclear or radiological emergency elsewhere.

7.2.18 The South African Police Services is responsible for executing their duties and responsibilities in respect of any security-initiated events, or a crime scene in accordance with KAA-769. Any action by the South African Police Services that may impact directly or indirectly on the management of a nuclear accident or nuclear incident condition must be in accordance with CCT RRR 7.2.14.

7.2.19 The South African National Defence Force is responsible for providing assistance and/or support to Government Disaster Management structures in the event of a nuclear or radiological emergency in accordance with procedure CCT RRR 7.2.15.

7.2.20 The General Manager: Koeberg Nuclear Power Station is responsible for:

(a) the establishment and maintenance of the Integrated Koeberg Nuclear Emergency Plan, including relevant training;

(b) the establishment and execution of the on-site aspects of the Integrated Koeberg Nuclear Emergency Plan;

(c) the interface with provincial and local authorities on emergency planning requirements and provisions; and

(d) ensuring the continuous existence of the three party agreement between Eskom, Western Cape Government and City of Cape Town.

7.2.21 The Emergency Management Group at the Koeberg Nuclear Power Station is responsible for maintaining the Integrated Koeberg Nuclear Emergency Plan resources in a state of preparedness, including the training of emergency response personnel necessary to provide for mitigation in the event of a nuclear or radiological emergency.

7.2.22 The Emergency Management Group at the Koeberg Nuclear Power Station is also responsible for ensuring the availability of meteorological services to support the Integrated Koeberg Nuclear Emergency Plan (KAG-006).

7.2.23 The Eskom Responsible Appointed Medical Practitioner, or his/her deputy on site, is responsible for the planning and arrangements associated with the emergency medical response necessary to accommodate the treatment of casualties who have physical injuries, who may have received large doses of ionising radiation, or who may be contaminated.

7.2.24 The Koeberg Emergency Controller is responsible for the direction of all facets of the on-site emergency response and is the only member of the Koeberg Emergency Response Organisation authorised to provide recommendations regarding protective actions to the Head of the DRMC and/or the Duty DRM Coordinator (supported by the Joint Decision-making Team and the Disaster Coordinating Team). The protective actions that may be recommended by the Emergency Controller are specified in Appendix 3.

NOTE: *In the event of a rapidly evolving nuclear incident or nuclear accident and when the Disaster Operations Centre has not been activated, the Koeberg Shift Emergency Controller or the Koeberg Emergency Controller should as a priority act in the interest of the public by ordering such urgent protective actions.*

7.2.25 The Koeberg Stakeholder Management Manager is responsible, in conjunction with the City of Cape Town Disaster Risk Management spokesperson, for the co-ordination of the media agencies and the general public on matters relating to the Integrated Koeberg Nuclear Emergency Plan.

The Koeberg Stakeholder Management Manager is also responsible for the readiness and operation of the Joint Media Centre at Bellville.

The Eskom Nuclear Spokesperson is responsible for all nuclear communications and press briefings relating to the nuclear accident. By default, the Regional Nuclear Emergency Manager is empowered to act on behalf of the Eskom Nuclear Spokesperson as and when required.

7.2.26 The Koeberg Chemistry Manager is responsible for the readiness and operation of the Environmental Survey Laboratory, and for liaising with the alternate ESL and other installations designated to provide analytical support.

The Koeberg Chemistry Manager is responsible for the provision of just-in-time training to the Koeberg Environmental Sampling Teams and for the provision of technical specialists and radiochemical analyses to support the TSC, if requested to do so by the Emergency Controller.

7.2.27 The Koeberg Radiation Protection Manager is responsible for the provision of Radiation Protection personnel to perform on-site and off-site radiological monitoring, access control, assessing the radiological information, radioactive waste disposal, dosimetry services and other radiation protection functions.

7.2.28 The Koeberg Chief Fire Officer is responsible for on-site Fire Protection, and for liaising with supporting Fire Services to ensure their compatibility with the requirements of the Integrated Koeberg Nuclear Emergency Plan.

7.3 Plans and Procedures

7.3.1 Emergency preparedness aspects regarding proactive risk reduction is defined in the Koeberg Safety Analysis Report.

7.3.2 The Integrated Koeberg Nuclear Emergency Plan and Eskom procedures are subjected to the Eskom document control and quality assurance process (KAA-500 and KSA-011), and are revised, maintained, reviewed, and updated at a frequency required by these processes.

7.3.3 The Nuclear Emergency Plan and implementing procedures and the associated procedures of Intervening Organisations are subjected to their relevant document control/quality assurance processes and are revised, maintained, reviewed, and updated as required by those processes.

7.4 Emergency Classification

7.4.1 Emergency conditions that would involve alerting or activating progressively larger segments of the emergency organisation is described in KEP-056.

7.4.2 There are four emergency classes; these are defined in Appendix 4:

(1) Unusual Event

(2) Alert

(3) Site Emergency

(4) General Emergency

7.4.3 Declaration of an Unusual Event doesn't require full activation of the Koeberg Emergency Response Organisation. Declaration of an Alert or higher classification requires activation of the Koeberg Emergency Response Organisation.

7.5 Assessment of Nuclear Installation Conditions

7.5.1 Appendix 1: Work Flow Responsibility Matrix describes the means of monitoring the situation in the Control Room, performing a prognosis, and classifying the nuclear incident at Koeberg Nuclear Power Station.

7.5.2 Appendix 1 describes the capability to carry out emergency monitoring of ionising radiation from overhead plume and deposited radioactive contamination related to a nuclear accident, both on and off-site.

7.6 Notification and Activation

7.6.1 The intervening organisations are notified in accordance with the lines of communication depicted in Appendix 5.

7.6.2 The procedures for the prompt notification of the public and for implementation of protective measures, if they become necessary, are addressed in Appendix 1.

7.6.3 The Integrated Koeberg Nuclear Emergency Plan is complimented by the Memorandum of Agreement entered into by Eskom Holdings SOC Ltd, the Western Cape Government and the City of Cape Town to ensure a co-ordinated and integrated emergency response.

7.6.4 Appendix 1 addresses key positions who are empowered to declare an emergency and the process for declaration of an emergency

7.6.5 Formal notification of relevant organisations is done using the Emergency Notification Form (ENF), which includes information to identify the location of the emergency, the emergency class, its nature, the time of occurrence, the important actions taken and the recommendations for urgent protective actions.

Formal notification using the ENF is not required for Unusual Events; however, the authorities should be telephonically notified based on the event in question at the discretion of the EC.

7.6.6 Procedures have been developed for Koeberg Nuclear Power Station emergency response personnel, which includes radiation protection and other expertise, to be activated as described in Appendix 1 within timeframes stipulated in Appendix 6.

Off-site functionaries and intervening organisations are activated with activation of the Disaster Operations Centre, based on accident prognosis in accordance with Appendix 1.

7.7 Mitigation

7.7.1 The accident management programme at Koeberg Nuclear Power station utilises Emergency Operating and Incident Procedures, Function Restoration procedures and technical support from the TSC and OSC to ensure early mitigation of nuclear incidents and / or nuclear accidents. Koeberg Nuclear Power station has established a suite of Severe Accident Management guidelines that is used for the mitigation of severe accidents.

7.7.2 The radiological surveillance information is used to monitor, confirm, or adjust protective actions. Availability of equipment, instrumentation and diagnostic aids that may be needed to influence the course and consequences of a nuclear accident are addressed in the procedures referenced in Appendix 1.

7.7.3 The deployment of resources and emergency response teams and the provision of technical assistance are addressed in procedures referenced in Appendix 1.

7.7.4 Provisions are made in Appendix 1 for the implementation of early phase protective actions, personal decontamination & medical care, the control of contaminated food and water, infra-structural decontamination, traffic and transportation and the implementation of longer-term protective actions during the late phase.

7.7.5 Intervention levels and action levels for protective actions are outlined in Appendices 7, 8, 9 and 10.

The application and implementation of intervention and action levels are addressed in the procedures referenced in Appendix 1; the use of Operational Intervention Levels is described in these procedures.

7.8 Emergency Planning Zones

7.8.1 Emergency Planning Zones are set out in Appendix 2 and consist of:

(1) Precautionary Action Zone (PAZ) – PEB to 5 km: An area around KNPS for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency at KNPS to reduce the risk of severe deterministic health effects. Protective actions within this area are to be taken before or shortly after a release of radioactive material or an exposure based on the prevailing conditions at the KNPS.

(2) Urgent Protective Action Planning Zone (UPZ) – 5 to 16 km: An area around KNPS for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency at KNPS to avert doses off the site in accordance with international safety standards. Protective actions within this area are to be taken based on environmental monitoring – or as appropriate, prevailing conditions at KNPS.

(3) Longer Term Protective Action Zone (LPZ) – PEB to 80 km: The pre-designated area around KNPS in which contingency plans and procedure are in place for taking effective protective actions to reduce the long-term exposure due to deposited radionuclides in the event of a nuclear accident at KNPS.

7.8.2 KNPS maintains the capabilities, means, resources and tools necessary to recommend as appropriate the implementation of urgent protective actions in the Precautionary Action Zone and Urgent Protective Action Planning Zone, including the ability to conduct prompt environmental monitoring. These capabilities are described in procedures referenced in Appendix 1.

7.8.3 Procedures are listed in Appendix 13 to ensure the safety of persons on-site in the event of an emergency. This includes the use of made for assembly points (muster stations), site access and egress points, medical care, and transportation arrangements.

7.9 Public Education and Information

7.9.1 KNPS provides information on the Integrated Koeberg Nuclear Emergency Plan to members of the public who could be affected by a nuclear accident (240-164300781).

7.9.2 Appendix 1 address arrangements to ensure the timely provision of information to the public during an emergency and to correct false/inaccurate information.

7.9.3 The public information publications contains instructions on what to do when the public notification sirens are activated.

7.10 Protection of Emergency Workers

7.10.1 Emergency worker exposures are controlled in accordance with Appendix 11.

7.10.2 Duty emergency workers are accounted for at all times during an emergency using duty rosters and dispatch logs.

7.10.3 KEP-024 and the emergency plans of intervening organisations address the protection of their emergency workers, controlling of doses they receive and requirements for medical follow-up.

7.10.4 Emergency workers are provided with the training, equipment (e.g., dosimetry & protective equipment) necessary to restrict their potential exposure, commensurate with the likely magnitude of exposure in an emergency situation.

7.11 Medical Assistance

7.11.1 Appendix 1 address arrangements to ensure the prompt availability and co-ordinated emergency response of medical first aid and assistance.

7.12 Longer Term Protective Actions

7.12.1 Intervention levels listed in Appendix 9, Appendix 10 and Appendix 14 should be followed for the implementation and withdrawal (transfer to exiting exposure situation) of longer-term protective actions.

7.12.2 Contingency arrangements for the management of longer-term protective actions are outlined in Appendix 1.

7.13 Logistic Support

7.13.1 Important supplies, equipment, communications systems, and emergency facilities required to allow intervening organisations to fulfil their emergency response responsibilities have been identified and are kept available as listed in Appendix 12.

7.13.2 Evacuation route infrastructure is expanded and maintained to ensure that the evacuation times in Appendix 2 are not challenged by population growth. This is demonstrated by use of a Traffic Evacuation Model.

7.13.3 More detailed emergency facility, equipment and supply controls are documented in the preparedness procedures listed in Appendix 13 (KAG-003 and KAG-004).

7.13.4 The Environmental Survey Laboratory at Koeberg Nuclear Power Station, iThemba Labs, NECSA and Radiation Control, Department of Health have laboratories capable of performing analysis of radioactively contaminated samples.

7.14 Training and Exercises

7.14.1 The skills and performance requirements for all positions relating to the Integrated Koeberg Nuclear Emergency Plan are defined and documented in relevant preparedness procedures (KAG-002 and RRR 7.2.42).

7.14.2 The programme to provide for the training of employees and for periodic exercising are defined and documented in preparedness procedures (Appendix 13). This includes specialised initial training and periodic re-training programmes.

7.14.3 Radiological orientation training programme for intervening organisations is document in the relevant preparedness procedures (KAG-002 and RRR 7.2.42).

7.14.4 Routine emergency response exercises, with the participation of the various Disaster Management Organisations are performed under the direction of the National Nuclear Regulator and in accordance with KAG-001 and RRR 7.2.41. Sufficient exercises are conducted to ensure that staff responsible for critical response functions participate in an exercise least once a year.

7.14.5 The Integrated Koeberg Nuclear Emergency Plan and associated procedures are updated in the light of experience gained in exercises, other compliance/assurance activities and the experience gained at other facilities by means of a corrective action management programme.

8.0 EMERGENCY RESPONSE

The following section describes the emergency response functions developed to meet the requirements in 238-53.

8.1 Prognosis of the Initiating Event

8.1.1 The operators will monitor the situation in the Koeberg Nuclear Power Station control room and perform a prognosis in accordance with plant procedures.

8.1.2 The Koeberg Shift Emergency Controller will perform the initial assessment and classification of a nuclear event and will adopt the duties of Emergency Controller, until relieved by the Koeberg Duty Emergency Controller.

8.2 Classification of the Event

8.2.1 The Koeberg Shift Emergency Controller and/or the Emergency Controller will classify the event in accordance with authorised procedures either as an Unusual Event; or an Alert; or a Site Emergency; or a General Emergency.

8.3 Activation of the Integrated Koeberg Nuclear Emergency Plan

8.3.1 The Koeberg Shift Emergency Controller will initiate the site alarm and activate the Koeberg emergency response organisation as outlined in Appendix 1.

8.3.2 The Koeberg Shift Emergency Controller will notify of the Duty Emergency Controller, the NNR and the City of Cape Town.

NOTE: *The Koeberg Shift Emergency Controller is only required to notify the City of Cape Town at an Alert, Site Emergency or General Emergency.*

8.3.3 The Disaster Coordinating Team will be activated by the by the City of Cape Town and will meet at the City of Cape Town Disaster Operations Centre after declaration of a nuclear or radiological emergency at Koeberg Nuclear Power Station.

8.3.4 The Head: Disaster Risk Management Centre, City of Cape Town will activate the appropriate National Organisations, i.e., the DMRE representative assigned to participate in the Disaster Coordinating Team, and the Heads of the Provincial and National Disaster Management Centres.

8.3.5 The Regional Nuclear Emergency Manager is responsible for the activation and operation of the Eskom Regional Nuclear Emergency Team situated in Bellville in accordance with the process outlined in Appendix 1.

8.3.6 The relevant intervening organisations and the NNR are updated of the emergency situation using the Emergency Notification Form.

8.3.7 The IAEA will be notified in accordance with KEP-083.

8.4 Declaration of a General Emergency

8.4.1 The Koeberg Shift Emergency Controller or the Koeberg Emergency Controller will determine the appropriate protective actions and recommend the actions to the Disaster Coordinating Team.

8.4.2 In the event where there is a need for urgent protective actions in the public domain and where the local authority is not yet able to order such protective actions, the Koeberg Shift Emergency Controller or the Koeberg Emergency Controller should as a priority act in the interest of the public by ordering such urgent protective actions. If time permits this should be done in consultation with the Head: Disaster Management Centre, City of Cape Town, or the designated Duty Disaster Risk Management Co-ordinator in the DOC.

8.5 Declaration of a Disaster

8.5.1 If a General Emergency is declared the City of Cape Town's Head of the Disaster Risk Management Centre, in consultation with the Joint Decision-making Team, will immediately inform the National Disaster Management Centre through the Head of the Western Cape Disaster Management Centre of the magnitude and severity of the event and request the classification of the event in accordance with section 23 of the Disaster Management Act, 2002 (Act No. 57 of 2002).

8.5.2 The declaration of a General Emergency at Koeberg Nuclear Power Station must result in the declaration of a Local or Provincial or National Disaster under the Disaster Management Act, 2002 (Act No. 57 of 2002) and the Disaster Management Amendment Act, 2015 (Act No. 16 of 2015), and subsequently consideration for a Local or Provincial or National State of Disaster.

8.5.3 In case a National Disaster is declared because of a nuclear or radiological emergency, the Chief Directorate Nuclear, in the DMRE will deploy DMRE representatives to the Disaster Operations Centre (DOC) of the City of Cape Town (or other designated Centre) and the National Disaster Management Centre.

8.6 Review available information upon activation of Emergency Control Centres

8.6.1 The Koeberg Shift Emergency Controller and/or the Koeberg Emergency Controller must review, consolidate, and supply all relevant information to the other Emergency Control Centres, i.e., the Regional Emergency Control Centre in Bellville and the Disaster Operations Centre, when activated.

8.6.2 The Disaster Coordinating Team will review and understand the relevant available information generated during the early phases of the emergency.

8.6.3 The Disaster Coordinating Team must review the ordered urgent protective actions and assess the type and resources that may be needed to implement the recommended protective actions.

8.6.4 The Joint Decision-making Team must verify the effectiveness of remedial action and optimise further action appropriately.

8.7 Co-ordinate Media Liaison

8.7.1 The Disaster Coordinating Team in conjunction with Eskom must co-ordinate the joint media liaison and communication in consultation with intervening organisations.

8.7.2 The Disaster Coordinating Team in conjunction with Eskom must maintain communication with key stakeholders on plant prognosis and changes to protective actions.

8.8 Co-ordinate Support Emergency Services

8.8.1 The Disaster Coordinating Team must activate and co-ordinate the required emergency response support services, personnel for security, control measures for controlling contaminated food and water, and resources to control traffic and transportation.

8.8.2 The Disaster Coordinating Team must expedite protective actions and provide for mass care, co-ordinate public notifications, co-ordinate zone isolation.

8.9 Protective Actions

8.9.1 The Koeberg Shift Emergency Controller and/or the Koeberg Emergency Controller must apply the available plant data in accordance with approved procedures, meteorology, radiological data and modelling where appropriate to recommend off-site protective actions to the Disaster Coordinating Team.

8.9.2 The Koeberg Health Physics Controller must apply radiological surveillance information to monitor, confirm or recommend adjustment to protective actions to the Koeberg Emergency Controller.

8.9.3 The Koeberg Health Physics Controller must recommend to the Emergency Controller the evacuation, sheltering or relocation of people who are residing in plume affected areas subjected to ionising radiation above the intervention levels.

8.9.4 The Koeberg Health Physics Controller must recommend to the Emergency Controller the distribution of potassium iodate prophylaxis as required in accordance with the intervention levels.

8.9.5 For protective actions decision making purposes during the early phase, the minimum angle to be considered with any given or predicted wind vector must be 67,5°.

8.9.6 Arrangements are detailed in the procedures listed in Appendix 1 for the appropriate care of sheltered, or evacuated populations including decontamination, surveillance, food, registration, and medical and social care.

8.10 Security Services

8.10.1 The Disaster Coordinating Team must co-ordinate security services to protect evacuated areas.

8.10.2 During a nuclear or radiological emergency the Koeberg Security Services will assist the Koeberg (Shift) Emergency Controller with the activation of the standby team, notifying of stakeholders, implementing on-site protective actions, and performing mustering and accountability. These activities will be performed in accordance with the relevant procedures outlined in Appendix 13 and will be performed above and beyond the critical operational duties, which will continue to be performed during an emergency.

8.11 Radiological Monitoring and Sampling

8.11.1 The Koeberg Field Team Leader and Koeberg Health Physics Controller must co-ordinate deployment and management of radiological monitoring team in affected areas.

8.11.2 The Koeberg Field Teams must perform radiological monitoring, delineate areas of relatively high activity concentration, collect emergency samples, and collect environmental TLDs as required.

8.11.3 The Koeberg Environmental Sampling Teams must collect environmental samples of soil, water, vegetables, milk, fish, and other media as directed by the ESL Sample Co-ordinator.

8.11.4 The Plotters must plot the measured data, such as ground concentrations, dose rates and integrated doses on the maps.

8.11.5 The Koeberg Field Team Leader and Koeberg Health Physics Controller must apply the radiological surveillance information to monitor, confirm or adjust protective actions relating to shelter, evacuation, and relocation.

8.12 Personal Decontamination

8.12.1 The Koeberg Field Team Leader and Koeberg Health Physics Controller must recommend deployment of decontamination teams from the CCT Environmental Health to areas as required. The Koeberg Radiation Protection Personnel or people under supervision of Koeberg Radiation Protection Personnel may assist the CCT Environmental Health Practitioners to monitor potentially contaminated persons, locate and assess levels of contamination on the body and determine if contamination is internal, use bioassay techniques and consult a medical practitioner, as appropriate.

8.12.2 The Koeberg Radiation Protection Personnel or people under supervision of Koeberg Radiation Protection Personnel must apply personal decontamination techniques on contaminated members of the public and refer contaminated casualties for emergency medical treatment in accordance with paragraph 13.6 of Appendix 1.

8.13 Control of Contaminated Food and Water

8.13.1 The Koeberg Health Physics Controller with assistance from the Koeberg Field Team Leader must apply environmental surveillance information to monitor, confirm or recommend adjustment of protective actions relating to the control of contaminated food and water in the plume affected area.

8.13.2 The Disaster Coordinating Team, must co-ordinate deployment of emergency response teams to implement contaminated food and water ban in areas as recommended by the Koeberg Emergency Controller.

8.14 Infra-structural Decontamination

8.14.1 The Disaster Coordinating Team must co-ordinate deployment of resources to perform decontamination of infrastructure, i.e., large buildings, cars, and soil in habitable areas etc. Infrastructure decontamination must be performed under supervision of Koeberg Radiation Protection Personnel or Trained Radiation Protection Specialists.

8.15 Public Notification

8.15.1 Arrangements exist for the alerting of permanent, transient, and special population groups within the emergency planning zones.

8.15.2 Public notification will be initiated by the activation of public notification sirens that are installed within populated area in the PAZ and UPZ, which will alert people of the emergency condition by an alarm tone and message.

8.15.3 Members of the public will tune in to designated radio stations on activation of the sirens (as instructed on the public information publications). Detailed instructional messages will be given to the public via radio and other media sources, the initial messages will be followed up with routinely broadcasts. Arrangements are in place between the CCT Disaster Risk Management, the SABC and other intervening organisations to provide these messages.

8.15.4 Arrangement are in place for intervening organisations to perform public notification in areas that are not covered by installed sirens.

8.16 Traffic and Transportations

8.16.1 The Disaster Coordinating Team must recommend roadblocks based on radiological monitoring results to identify affected areas, which require traffic control and transportation.

8.16.2 The Disaster Coordinating Team must co-ordinate deployment of traffic control officers and transportation to areas as required.

8.17 International Support

8.17.1 Provisions are in place for Framatome, EDF, INPO/WANO and the IAEA to provide support during a nuclear or radiological emergency at the Koeberg Nuclear Power Station in accordance the relevant procedure in Appendix 13.

8.18 Longer Term Monitoring

8.18.1 The Disaster Coordinating Team must co-ordinate a long-term health monitoring programme for exposed people with probable deterministic effects, initiate epidemiological studies and implement long-term radiological monitoring in relocated or resettled areas.

8.19 Termination of a General Emergency

8.19.1 The on-site emergency situation may be terminated by the Koeberg Emergency Controller in consultation with the National Nuclear Regulator when the plant is under control and releases from the plant are within acceptable limits for normal operation. The site emergency organisation, however, should assist the public authorities until such time as the off-site emergency has been declared terminated. The recovery operations must be led by governmental bodies with the assistance of Eskom.

8.20 Termination of the Late Phase

8.20.1 The Joint Decision-making Team must terminate the late phase of the nuclear or radiological emergency in consultation with all relevant authorities, including members of the Disaster Coordinating Team.

9.0 RECORDS

9.1 Records relating to nuclear accidents must be kept in a documentation system for 40 years after the event.

10.0 ATTACHMENTS

Appendix 1 – Work Flow Responsibility Matrix

Appendix 2 – NNR Requirements from the Technical Basis for the Koeberg Emergency Plan

Appendix 3 – Protective Actions

Appendix 4 – Classification of Nuclear Emergencies

Appendix 5 – Principal Lines of Communication

Appendix 6 – Emergency Response Times for Warning, Notification and Stand-By Personnel

Appendix 7 – Emergency Intervention Levels for Early Phase Protective Actions

Appendix 8 Levels of Avertable Dose that Justify Intervention

Appendix 9 – Emergency Intervention Levels for Temporary Relocation and Permanent Resettlement

Appendix 10 – Generic Action Levels for Foodstuffs

Appendix 11 – Total Effective Dose Guidance for Emergency Workers

Appendix 12 – Emergency Plan Facilities and Equipment

Appendix 13 – Integrated Koeberg Nuclear Emergency Plan Document Hierarchy

Appendix 14 – Generic Criteria for Transitioning to an Existing Exposure Situation

Appendix 15 – List of Intervening Organisations

Appendix 16 – Justification

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 1**

R – Responsible
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Y/N or N/Y – Decision
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Flow Path:
Main Flow ⟷ Secondary Flow

ACTIVITIES	1 KOEBERG SHIFT EMERGENCY CONTROLLER AND/OR EMERGENCY CONTROLLER	2 KOEBERG HEALTH PHYSICS CONTROLLER	3 ESKOM REGIONAL NUCLEAR EMERGENCY MANAGER, RNET	4 HEAD OF THE DRMC / DUTY DRM COORDINATOR AT THE DOC	5 KOEBERG ADMINISTRATIVE OFFICER	6 HEAD OF NATIONAL DISASTER MANAGEMNT CENTRE	7 NATIONAL NUCLEAR REGULATOR	8 EMERGENCY RESPONSE INTERVENING ORGANISATIONS	9 JOINT DECISION-MAKING TEAM	10 DISASTER COORDINATING TEAM	11 FIELD TEAM LEADER AND FIELD TEAMS	12 TECHNICAL SUPPORT CENTRE LEADER	NOTES & REFERENCES
1.0 Prognosis of the Initiating Event													Operating Shift to perform prognosis in accordance with KEP-056.
1.1 Monitor the situation in the Control Room and perform a prognosis in accordance with plant procedures.	[R]												Control room personnel assess events using Koeberg Incident or Accident Procedures.
1.2 Keep a record of all actions and decisions.	[R]												All records of details of the nuclear accident must be kept safely for 40 years from the date of the nuclear accident.
2.0 Classification of the Event													KEP-056 or KEP-060
2.1 Classify the nuclear incident or accident and declare:	[R]												In accordance with KEP-060 or KEP-056. Appendix 6
2.1.1 An Unusual Event, or	[R]												Go to Activity 3
2.1.2 An Alert, or	[R]	(S)											Perform Activity 7 then go to Activity 4.
2.1.3 A Site Emergency, or	[R]	(S)											Perform Activity 7 then go to Activity 5.
2.1.4 A General Emergency	[R]	(S)											Perform Activity 7 then go to Activity 6.
3.0 Unusual Event													
3.1 Formally declare event	[R]												KEP-056 (GIS)
3.2 Conduct on-site announcements and assemble essential staff, if needed.	[R]	(S)											KEP-056 KAA-611
3.3 Perform emergency notifications.	[R]	(I)	(I)		(S)		[I]				(I)	(I)	KEP-056, KEP-002 Notification of the PECC not required. ENF will not be used.
3.4 Determine and implement appropriate emergency response actions.	[R]	(S)			(S)							(S)	KEP-056 or KEP-060 and applicable contingency plan / procedure.
3.5 Review the classification as event conditions change.	[R]	(S)]	(I)	(S)								(S)	KEP-060 or KEP-056

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Flow Path:
Main Flow ⟷ Secondary Flow

ORGANISATION / FUNCTION

ACTIVITIES	1 KOEBERG SHIFT EMERGENCY CONTROLLER AND/OR EMERGENCY CONTROLLER	2 KOEBERG HEALTH PHYSICS CONTROLLER	3 ESKOM REGIONAL NUCLEAR EMERGENCY MANAGER, RNET	4 HEAD OF THE DRMC / DUTY DRM COORDINATOR AT THE DOC	5 KOEBERG ADMINISTRATIVE OFFICER	6 HEAD OF NATIONAL DISASTER MANAGEMNT CENTRE	7 NATIONAL NUCLEAR REGULATOR	8 EMERGENCY RESPONSE INTERVENING ORGANISATIONS	9 JOINT DECISION-MAKING TEAM	10 DISASTER COORDINATING TEAM	11 FIELD TEAM LEADER AND FIELD TEAMS	12 TECHNICAL SUPPORT CENTRE LEADER	**NOTES & REFERENCES**
3.6 Maintain communication with key stakeholders	[R]		(S)	(I)			(I)	(I)					KEP-056 or KEP-060 and/or KEP-092
3.7 Keep a record of all actions and decisions.	[R]	(S)			(S)						(S)	(S)	All records of details of the nuclear accident must be kept safely for 40 years from the date of the nuclear accident.
4.0 Alert													
4.1 Formally declare event	[R]												KEP-056 or KEP-060 (GIS)
4.2 Determine on site protective actions.	[R]	(S)	[I]		(S)		(I)					(S)	KEP-060 or KEP-056 Contingency plans
4.3 Conduct on-site announcements and muster all staff (if needed).	[R]				(S)								KEP-060 or KEP-056 KAA-611
4.4 Perform emergency notifications	[R]	[I]	[I]	[I]			[I]	(I)			[I]	[I]	KEP-060 or KEP-056, KEP-002 ENF Appendix 6
4.5 Activate DOC, if required.				[R]				(I)	(S)	(S)			The Duty Disaster Risk Management Coordinator is responsible for staff the DOC. However, the DOC staff are normally called out via the PECC 107. CCT RRR 7.2.1 & 7.2.2
4.6 Review the classification as plant / event conditions change.	[R]	[I]	(I)									(S)	Review conditions against criteria contained in KEP-060 or KEP-056 Contingency plans
4.7 Maintain communication with key stakeholders on plant prognosis and changes to protective actions.	[R]		[S]	[I]			[I]						KEP-056 or KEP-060 Continuous action. Appendix 5
5.0 Site Emergency													
5.1 Formally declare event	[R]	[I]											KEP-060 or KEP-056
5.2 Determine on-site protective actions.	[R]	(S)	[I]				[I]						KEP-060, or KEP-056 Appendix 3 KEP-024

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Flow Path:
Main Flow Secondary Flow

ORGANISATION / FUNCTION

ACTIVITIES	1 KOEBERG SHIFT EMERGENCY CONTROLLER AND/OR EMERGENCY CONTROLLER	2 KOEBERG HEALTH PHYSICS CONTROLLER	3 ESKOM REGIONAL NUCLEAR EMERGENCY MANAGER, RNET	4 HEAD OF THE DRMC / DUTY DRM COORDINATOR AT THE DOC	5 KOEBERG ADMINISTRATIVE OFFICER	6 HEAD OF NATIONAL DISASTER MANAGEMNT CENTRE	7 NATIONAL NUCLEAR REGULATOR	8 EMERGENCY RESPONSE INTERVENING ORGANISATIONS	9 JOINT DECISION-MAKING TEAM	10 DISASTER COORDINATING TEAM	11 FIELD TEAM LEADER AND FIELD TEAMS	12 TECHNICAL SUPPORT CENTRE LEADER	**NOTES & REFERENCES**
5.3 Conduct on-site announcements, muster all staff, and implement on-site protective actions.	[R]	(S)	[I]	(I)	(S)								KEP-060 or KEP-056, KAA-611
5.4 Perform emergency notifications.	[R]		[I]	[I]			[I]	(I)					KEP-060 or KEP-056, KEP-002 ENF Appendix 6
5.5 Activate DOC as per Section 8.				[R]				[I]	[S]	[S]			The Duty Disaster Risk Management Coordinator is responsible to staff the DOC. However, the DOC staff are called out via the PECC 107. CCT RRR 7.2.1 & 7.2.2
5.6 Pre-stage / mobilise the required response	(I)			[R]				[S]		[S]			Holding points, MCCs, etc. CCT RRR 7.2.5 CCT RRR 7.2.6 CCT RRR 7.2.8 CCT RRR 7.2.34
5.7 Review the classification as plant / event conditions change.	[R]	(S)										(S)	Review plant conditions against criteria contained in KEP-056, or KEP-060.
5.8 Maintain communication with key stakeholders on plant / event prognosis and changes to protective actions.	[R]		[S]	[I]	(S)		[I]						KEP-056 or KEP-060 Appendix 5
5.9 CCT to liaise with DMRE to send representatives to the DOC in Cape Town.	(I)		(I)	[R]			(I)						CCT RRR 7.2.2
6.0 General Emergency													
6.1 Formally declare a General Emergency	[R]	[I]											KEP-060 or KEP-056 GIS
6.2 Perform off-site dose projections.	[R]	[S]											KEP-036 KEP-065
6.3 Determine and recommend protective actions.	[R]	[S]	[I]	[C]			[I]						Appendix 3 & Appendix 7 KEP-065 KEP-024
6.4 Conduct on-site announcements and muster all staff	[R]		[I]	[I]			[I]						If not done earlier. KEP-060 or KEP-056, KAA-611

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Main Flow Secondary Flow

ORGANISATION / FUNCTION

ACTIVITIES	1 KOEBERG SHIFT EMERGENCY CONTROLLER AND/OR EMERGENCY CONTROLLER	2 KOEBERG HEALTH PHYSICS CONTROLLER	3 ESKOM REGIONAL NUCLEAR EMERGENCY MANAGER, RNET	4 HEAD OF THE DRMC / DUTY DRM COORDINATOR AT THE DOC	5 KOEBERG ADMINISTRATIVE OFFICER	6 HEAD OF NATIONAL DISASTER MANAGEMNT CENTRE	7 NATIONAL NUCLEAR REGULATOR	8 EMERGENCY RESPONSE INTERVENING ORGANISATIONS	9 JOINT DECISION-MAKING TEAM	10 DISASTER COORDINATING TEAM	11 FIELD TEAM LEADER AND FIELD TEAMS	12 TECHNICAL SUPPORT CENTRE LEADER	**NOTES & REFERENCES**
6.5 Perform emergency notifications	[R]		[I]	[I]			[I]	(I)					KEP-060 or KEP-056 KEP-002 ENF Appendix 6
6.6 Activate DOC as per Section 8, if not done earlier.				[R]			(S)	[S]	[I]	[S]			The Duty Disaster Risk Management Coordinator is responsible to staff the DOC. However, the DOC staff are called out via the PECC 107. CCT RRR 7.2.1 & 7.2.2
6.7 Mobilise the required response: Traffic & Transportation Zone Isolation Zone Security Mass Care	[I]		[I]	[R]		[I]	(I)	[S]	[S]	[S]			CCT RRR 7.2.5 CCT RRR 7.2.6 CCT RRR 7.2.8 CCT RRR 7.2.14 CCT RRR 7.2.15 CCT RRR 7.2.34
6.8 Receive the recommended protective actions.	[S]		(S)	[R]		(I)		[I]	[I]	[I]			Receive briefing on protective actions as appropriate. CCT RRR 7.2.1
6.9 Review the recommended protective actions	(S)			[R]		[I]	(S)	[I]	[S]	[S]			CCT RRR 7.2.7 DCT & JDT to assist in the review of recommended protective actions.
6.10 Decide on and order the appropriate protective actions.	[I]		[I]	[R]		[I]		[I]	[C]	[I]			JDT to concur with protective action orders. **NOTE:** Head of the Disaster Management Centre (CCT) may order protective actions recommended by the KNPS Emergency Controller in the absence of the rest of the JDT.
6.11 Implement protective actions and provide for mass care where appropriate.	[I]			[R]		[I]		[S]	(S)	[S]			As per Section 13.
6.12 Perform Public Notification	(S)		[I]	[R]	(S)	[I]	[I]	[S]	(S)	[S]			KEP-I-001 CCT RRR 7.2.20 CCT RRR 7.2.21 Appendix 6

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Main Flow ⟷ Secondary Flow

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	ORGANISATION / FUNCTION												
6.13 Maintain communication with key stakeholders on plant prognosis and changes to protective actions.	[R]		[S]	[I]			[I]		[I]	[I]			KEP-056 or KEP-060 Appendix 5 Appendix 8 Continuous action
6.14 DMRE to send a representative to NDMC when a General Emergency is declared at KNPS.	[I]			•		[I]							Responsibility of the Chief Directorate: Nuclear Safety and Technology in the DMRE
7.0 Activation Koeberg Nuclear Emergency Plan													
7.1. Initiate site alarm and notifications.	[R]		[I]	[I]									KEP-060, or KEP-056
7.2 Activate KNPS standby emergency responders	[R]	[I]	[I]		[I]		[I]					[I]	KAA-723 and KEP-002
7.3 Activate radiological field monitoring.	[R]	(S)									[S]		KEP-076
7.4 Activate the KNPS ECC, TSC and OSC; and commence handover of emergency control.	[R]		[I]	[I]									1 hour for Alert and higher emergency classifications KEP-002, KEP-060, KEP-063, KEP-095
7.5 If required, activate RNET.	[R]		[S]	(I)									KEP-002 KEP-092
7.6 Notify all supporting agencies emergency control centres.	[R]		[I]	[S]				[I]					KEP-002
7.7 Deploy a Technical Advisor to DOC.	[R]		[I]	[I]									KEP-060
7.8 Keep a record of all actions and decisions.	[R]	[S]			[S]						[S]	[S]	Continuous action. All records of details of the nuclear accident must be kept safely for 40 years from the date of the nuclear accident.
8.0 Activation of Disaster Operations Centre (DOC)													
8.1 Activate the Disaster Operations Centre	[I]		[I]	[R]		[I]	(I)	[S]	[I]	[I]			See note at 6.6 and 5.5. Duty DRM Coordinator CCT RRR 7.2.1 to 7.2.4

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	ORGANISATION / FUNCTION												
8.2 Obtain a briefing from KNPS Emergency Controller on the plant status, plant conditions, plant prognosis and nuclear incident or accident classifications.	[S]		(S)	[R]		[I]		(I)	[I]	[I]			KEP-060 CCT RRR 7.2.1 CCT RRR 7.2.2
8.3 Maintain communication with key stakeholders on plant prognosis and changes to protective actions.	[I]		[S]	[R]		[I]	(I)	[I]					Continuous action CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.22 CCT RRR 7.2.23
8.4 Keep a record of all actions and decisions.	[S]			[R]		[I]							All records of details of the nuclear accident must be kept safely for 40 years from the date of the nuclear accident. CCT RRR 7.2.43
9.0 Classification of the Disaster													
9.1 Assess the magnitude and severity of the event	(S)			[R]					[S]	(S)			DMA section 49
9.2 Inform the National Disaster Management Centre via the Head of the Western Cape Disaster Management Centre of the magnitude and severity of the event and make appropriate recommendations regarding the classification of the event.	[I]		[I]	[R]		[I]	[I]	[I]	[C]	[S]			DMA section 49
9.3 Head of the Western Cape Disaster Management Centre assess the magnitude and severity of the event				(S)								•	Responsibility of the Head of the Western Cape Disaster Management Centre DMA section 35
9.4 Head of the Western Cape Disaster Management Centre informs the National Disaster Management Centre the magnitude and severity of the event and make appropriate recommendations regarding the classification of the event.				[I]		[I]						•	Responsibility of the Head of the Western Cape Disaster Management Centre DMA section 35

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Flow Path:
Main Flow ⟷ Secondary Flow

ACTIVITIES	KOEBERG SHIFT EMERGENCY CONTROLLER AND/OR EMERGENCY CONTROLLER (1)	KOEBERG HEALTH PHYSICS CONTROLLER (2)	ESKOM REGIONAL NUCLEAR EMERGENCY MANAGER, RNET (3)	HEAD OF THE DRMC / DUTY DRM COORDINATOR AT THE DOC (4)	KOEBERG ADMINISTRATIVE OFFICER (5)	HEAD OF NATIONAL DISASTER MANAGEMNT CENTRE (6)	NATIONAL NUCLEAR REGULATOR (7)	EMERGENCY RESPONSE INTERVENING ORGANISATIONS (8)	JOINT DECISION-MAKING TEAM (9)	DISASTER COORDINATING TEAM (10)	FIELD TEAM LEADER AND FIELD TEAMS (11)	TECHNICAL SUPPORT CENTRE LEADER (12)	**NOTES & REFERENCES**
	ORGANISATION / FUNCTION												
9.5 Assess the magnitude and severity of the event				(S)		[R]			(S)				DMA section 23
9.6 Classify the disaster as a local, provincial, or national disaster.				[I]		[R]			(S)				DMA section 23 National Nuclear Disaster Management Plan
9.7 Record the prescribed particulars of the disaster in the prescribed register.				[S]		[R]			(S)				DMA section 23
9.8 If deemed necessary, declare a Local, Provincial or National State of Disaster.	[I]			[C]		[S]	[I]	[I]	[S]	(S)		•	CCT council, Premier of the Western Cape or Minister of Co-operative Governance and Traditional Affairs accordance with the DMA.
9.9 Keep a record of communication.				[S]		[R]			[S]				All records of details of the nuclear accident must be kept safely for 40 years from the date of the nuclear accident.
10.0 Late Phase													
10.1 Formal de-briefing and assessment of early and intermediate phase activities.	[R]		(I)	[C]		[I]	[I]						Emergency Controller provides information to the Disaster Coordinating Team
10.2 Review and consolidate information generated during the early phases of the emergency.	[S]		(I)	[R]		[I]	[I]	[I]	[S]	[S]			
10.3 Apply land-use database and maps for characterising the affected area, food, and population.	[S]		(I)	[R]		[I]	[I]	[I]	[S]	[S]			KEP-I-004 CCT GIS KSSR
10.4 Identify areas where remedial actions must be taken and areas where remedial actions may be considered.	[S]		(I)	[R]		[I]	[I]	[S]	[S]	[S]			CCT RRR 7.2.36 KEP-024
10.5 Co-ordinate media liaison and communication.			[S]	[R]		[I]			[S]	[S]			KEP-033 CCT RRR 7.2.22

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Main Flow ⟷ Secondary Flow

ORGANISATION / FUNCTION

ACTIVITIES	1 KOEBERG SHIFT EMERGENCY CONTROLLER AND/OR EMERGENCY CONTROLLER	2 KOEBERG HEALTH PHYSICS CONTROLLER	3 ESKOM REGIONAL NUCLEAR EMERGENCY MANAGER, RNET	4 HEAD OF THE DRMC / DUTY DRM COORDINATOR AT THE DOC	5 KOEBERG ADMINISTRATIVE OFFICER	6 HEAD OF NATIONAL DISASTER MANAGEMNT CENTRE	7 NATIONAL NUCLEAR REGULATOR	8 EMERGENCY RESPONSE INTERVENING ORGANISATIONS	9 JOINT DECISION-MAKING TEAM	10 DISASTER COORDINATING TEAM	11 FIELD TEAM LEADER AND FIELD TEAMS	12 TECHNICAL SUPPORT CENTRE LEADER	NOTES & REFERENCES
10.6 Use environmental monitoring information, meteorology and radiological data or modelling to determine additional protective actions.	[R]	[S]	[I]										KEP-036 KEP-024 KEP-065
10.7 Recommend intermediate or long-term protective actions	[R]	[S]	[I]	[I]		(I)	[I]	(I)	[I]	[I]			KEP-024 This includes the review of early phase actions.
10.8 Review recommended protective actions and order the appropriate protective actions.	[S]		(I)	[R]		(I)	(S)	[I]	[C]	[S]			DCT & JDT to assist in the review of recommended protective actions. JDT to concur with ordered actions. CCT RRR 7.2.7
10.9 Assess the type and potential source of resources that may be needed for implementation of recommended protective actions.	(S)		(I)	[R]		[S]		[S]		[S]			CCT RRR 7.2.29 CCT RRR 7.2.34 CCT RRR 7.2.36 KGG-005
10.10 Activate and co-ordinate relevant organisations	[I]		[I]	[R]				[I]		[S]			CCT RRR 7.2.1
10.11 Expedite protective actions and provide for mass care where appropriate.	[I]		[I]	[R]		[S]	(I)	[S]		[S]			CCT RRR 7.2.33 CCT RRR 7.2.34 CCT RRR 7.2.33
10.12 Perform Public Notification.	(S)		[I]	[R]		[I]	[I]	[S]	(S)	[S]			CCT RRR 7.2.21 CCT RRR 7.2.22
10.13 Adjust zone isolation.	[I]		[I]	[R]		[I]	[I]	[S]	[C]	[S]			CCT RRR 7.2.8
10.14 Perform radiological surveys to monitor, confirm or recommend other protective actions.	[R]	(C)	[I]	[I]			[I]		[I]	(I)	[S]		KEP-010
10.15 Maintain communication with key stakeholders on plant prognosis and the status and effectiveness of protective actions.	[I]		[S]	[R]		[I]	[I]	[I]	[I]				CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22

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10.16 Adjust security services to protect evacuated and relocated areas.	[I]		[I]	[R]		[S]	[I]	[S]					CCT RRR 7.2.14 CCT RRR 7.2.15
10.17 Co-ordinate operations at emergency reception centres and provide emergency social services, including lodging, food, clothing, registration, inquiry, and personal services.	[I]		[I]	[R]		[I]	[I]	[S]	[S]	[S]			CCT RRR 7.2.34 CCT RRR 7.2.33
10.18 Co-ordinate exposure monitoring and control, including dosimetry services.	[S]	(S)	[I]	[R]				[S]	[I]	[S]			KEP-035 CCT RRR 7.2.28
10.19 Verify the effectiveness of remedial action and, after consultation of interested parties, adjust further action appropriately.	[S]	(S)	(S)	[R]		[S]	(S)	[S]					Consultation should include public representatives.
11.0 Radiological Monitoring and Sampling													
11.1 Deploy and manage radiological monitoring teams in populated plume affected areas.	[R]	[C]	[I]				[I]				[S]		KEP-041 KEP-036
11.2 Perform radiation and contamination surveys. Collect and process environmental TLDs.	[R]	[C]									[S]		KEP-010 KEP-035
11.3 Collect, assess, and validate results from radiological surveillance field teams.	[R]	(S)	[I]	[I]			[I]	(I)			[S]		KEP-036 KEP-041 KEP-065
11.4 Prepare area maps based on measured data, such as ground concentrations, dose rates and integrated doses.	[R]	[S]	[I]	[I]	(S)		[I]	(I)			[S]		KEP-036 KEP-041 KEP-I-004
11.5 Apply radiological surveillance information to monitor, confirm or adjust protective actions relating to shelter, evacuation, and relocation.	[R]	(S)	[I]	[I]			[I]	[I]					KEP-024 The KNPS Emergency Controller recommends changes as required to the Disaster Coordinating Team.

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11.6	Maintain communication with key stakeholders on changes to protective actions, verify the effectiveness of remedial action and optimise further action appropriately.	[I]		[S]	[R]		[I]	[I]	[I]	[S]	[S]			CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22
11.7	Deploy environmental sampling teams in plume affected areas.	[R]	[C]	[I]	[I]			[I]	(I)			(S)		KEP-I-007 and KEP-010 ESL Sampling Coordinator
11.8	Collect emergency samples.	[R]	I	(I)	(S)			(I)	(S)			(S)		KEP-010
11.9	Collect environmental samples of soil, water, vegetables, milk, fish, etc.	[R]	[C]	[I]	(S)			[I]	(S)					KEP-I-007 ESL with support from Environmental Sampling Teams.
11.10	Assess radionuclide concentration in samples and identify and quantify specific radionuclides.	[R]	[C]	[I]	[I]			[I]	(S)		(S)	(S)		KEP-I-006
11.11	Maintain communication with key stakeholders on changes in conditions.	[I]		[S]	[R]		[I]	[I]	(I)					CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22
12.0	**Early Phase Protective Actions**													
12.1	Apply radiological surveillance information to monitor, confirm or adjust protective actions.	[S]	[S]	[I]	[R]		[I]	[I]	[I]					KEP-024 KEP-036 CCR RRR 7.2.7 CCT RRR 7.2.25 – 7.2.34
12.2	Evacuate, shelter, relocate people who are residing in plume affected areas based on protective action decisions.	I	I	[I]	[R]		[S]	(S)	[S]		[S]			CCT RRR 7.2.25 – 34 The Joint Decision-making Team is responsible for decision-making and management of public protective actions
12.3	Distribute stable iodine based on protective action decisions.	I	I	[I]	[R]			[I]	[S]					CCT RRR 7.2.25 RRR 7.2.13
12.4	Provide mass care for the relevant affected public, including pets / domestic animals.			[I]	[R]		[I]	(I)	[S]					SPCA to provide service for animal care. RRR 7.2.13 RRR 7.2.34

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12.5 Initiate the control of contaminated food and water	I	I	[I]	[R]			[I]	[S]					CCT RRR 7.2.29
12.6 Maintain communication with key stakeholders on changes to protective actions, verify the effectiveness of remedial action and optimise further action appropriately.			[S]	[R]		[I]							CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22
13.0 Personal Decontamination & Medical Care													
13.1 Monitor & decontaminate potentially contaminated site staff, if required.	[R]	[S]	[I]	(I)			[I]	(S)					
13.2 Monitor contaminated / potentially contaminated persons.	(S)	(S)	[I]	[R]			[I]	[S]					CCT RRR 7.2.26 CCT RRR 7.2.27
13.3 Perform personal decontamination	(S)	(S)	[I]	[R]			[I]	[S]					CCT RRR 7.2.27 Include pets and domestic animals but giving preference to people. Personal decontamination techniques and processes.
13.4 If contamination is internal, use bioassay techniques.	[S]	[C]	[I]	[R]			[I]	[I]					
13.5 Provide emergency medical treatment of contaminated casualties on-site.	[R]	(S)	(I)		(S)		[I]	(S)					KAA-583 & KEP-087 Most qualified medical person on-scene is responsible.
13.6 Provide emergency medical treatment of contaminated casualties off-site.	(I)			(S)	(S)	(I)		[R]	(I)	(S)			CCT RRR 7.2.12 TRCF Manual WCG EMS / METRO or Tygerberg Hospital
13.7 Maintain communication with key stakeholders on changes to protective actions; verify the effectiveness of remedial action.	(I)	(I)	(I)	[R]		(I)				[S]			CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22

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14.0 Control of Contaminated Food and Water													
14.1 Apply environmental surveillance information to monitor, confirm or adjust protective actions relating to the control of contaminated food and water in the plume affected area and the country.	[S]	[S]	[I]	[R]		[I]	[I]	[S]					CCT RRR 7.2.29. KEP-I-006 KEP-024 Monitoring performed by the ESL with support from the Koeberg Environmental Sampling Teams.
14.2 Deploy teams to control contaminated food and water in areas as required.	[S]	[S]	[I]	[R]		[I]	[I]	[S]		[S]			CCT RRR 7.2.29
14.3 Control food (temporary or permanent food bans, food contamination reduction measures, food diversion, etc).	[S]	[S]	[I]	[R]		[I]	[I]	[S]	[C]	[S]			CCT RRR 7.2.29
14.4 Provide alternative food supplies if required.	[I]		[I]	[R]		[S]	[I]	[S]	[S]	[S]			Office of the National Executive to be informed and support from Minister of Co-operative Governance and Traditional Affairs.
14.5 Restrict the movement of contaminated food out of the affected area.	[S]	[S]	[I]	[R]			[I]	[S]	[C]	[S]			CCT RRR 7.2.29
14.6 Implement and enforce food control measures for import and exports.	[S]	[S]	[I]	[R]		[I]	[I]	[S]	[C]	[S]			To be implemented in consultation with IAEA/FAO via the Assistance Convention.
14.7 Maintain communication with key stakeholders on changes to protective actions, verify the effectiveness of remedial action and optimise further action appropriately.			[S]	[R]		[I]		[S]	[S]	[S]			CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22

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15.0 Infra-structural Decontamination													
15.1 Apply environmental surveillance information and radiological monitoring results to determine the need for decontamination of the infrastructure i.e., roads, buildings, cars, etc.	[S]	[S]	[I]	[R]		[I]	[I]	[S]	(C)	(S)	[S]		KEP-010 KEP-065
15.2 Deploy decontamination teams to remove contamination from structures and soil in habitable areas.	[S]	[S]	[I]	[R]		[I]	[I]	[S]	(C)		[S]		KGG-005 Infrastructure Decontamination must be performed with trained RP staff.
15.3 Apply post-decontamination surveillance information and radiological monitoring results to monitor, confirm or adjust protective actions relating to relocation.	[R]	[C]	[I]	[I]		[I]	[I]	[S]	(C)		[S]		KEP-010 KEP-024 CCT RRR 7.2.33
15.4 Maintain communication with key stakeholders on changes to evacuation and relocation protective actions verify the effectiveness of remedial action and optimise further action appropriately.			[S]	[R]		[I]	[I]						CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22
16.0 Traffic and Transportation													
16.1 Apply environmental surveillance information and radiological monitoring results to identify affected areas, which requires traffic control and transportation.	[S]	[S]	[I]	[R]		[I]	[I]	[S]	[C]	[I]	[S]		CCT RRR 7.2.8
16.2 Deploy traffic control officers and transportation to areas as required.	[S]	[S]	[I]	[R]		[I]	[I]	[S]		[S]			CCT RRR 7.2.8

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16.3 Control access to contaminated areas to limit the spread of contamination.	[S]	[S]	[I]	[R]		[I]	[I]	[S]	[C]	[S]			CCT RRR 7.2.8.
16.4 Implement marine, rail, and traffic control in the affected area.	[S]	[S]	[I]	[R]		[I]	[I]	[S]	[C]	[S]			CCT RRR 7.2.8
16.5 Maintain communication with key stakeholders on changes to protective actions, verify the effectiveness of remedial action and optimise further action appropriately.			[S]	[R]		[I]	[I]	(S)		[S]			CCT RRR 7.2.1 CCT RRR 7.2.2 CCT RRR 7.2.23 CCT RRR 7.2.22
17.0 Longer Term Monitoring													
17.1 Develop and implement long-term health monitoring of people with probable deterministic effects.	[I]	[I]	[I]	[R]		[I]	(I)	[I]		[S]			Office of the National Executive to concur and support from Minister of Co-operative Governance and Traditional Affairs.
17.2 Initiate epidemiological studies.	[I]	[I]	[I]	[R]		[I]	(I)	[S]		[S]			With support from Minister of Co-operative Governance and Traditional Affairs.
17.3 Implement long-term radiation monitoring in relocated or resettled areas.	[S]		[I]	[R]		[I]	(I)	[S]		[S]			With support from Minister of Co-operative Governance and Traditional Affairs.
17.4 Keep a record of each person who was within the area affected by the accident at the time of the accident	[S]			[S]			[R]						
18.0 Termination of the on-site Emergency													
18.1 Terminate the late phase when the plant is under control and releases from the plant are within acceptable limits for normal operation.	[R]	[S]	[I]	[C]	[I]	[I]	(C)	[I]	[C]		[I]	[S]	

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ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	
19.0 Termination of the Late Phase													The heads of the NDMC and WCG Disaster Management Centre in collaboration with all relevant national and provincial stakeholders and other intervening organisations should be responsible for the management of radioactive waste. (CCT RRR 7.2.36)
19.1 Terminate the late phase by notice in the applicable gazette.	[S]	[S]		[S]		[R]	[C]	[S]					

APPENDIX 2

NNR REQUIREMENTS FROM THE TECHNICAL BASIS FOR EMERGENCY PLANNING AT KOEBERG NUCLEAR POWER STATION[1]

ZONE	SIZE (km)	ACTION	IMPLEMENTATION TIME (hours)	JUSTIFICATION
PAZ	PEB – 5	Evacuation (all sectors) based on in-plant conditions	4[a]	Reduces the risk of deterministic effects by pre-emptively evacuating out to a radius where deterministic mortality effects may not occur. LG-1036 and IAEA TECDOC 953 and 955
UPZ	5 – 16	Shelter (downwind sectors) Evacuation based on in-plant conditions leading to 12-to-16-hour advance warning. Thyroid blocking (downwind sectors)	4[a] 16 10[a]	Reduces the risk of stochastic effects by pre-emptively sheltering downwind and then evacuating based on prevailing conditions (e.g., plant degradation and environmental monitoring). LG-1036 and IAEA TECDOC 953 and 955 In line with international practice
LPZ	PEB – 80	Relocation (based on environmental monitoring) Food ban (based on environmental monitoring)	Long term action Long term action	Reduces the risk of stochastic effects from long term exposure to deposition and ground shine. LG-1036 and IAEA TECDOC 953 and 955

[a] Implementation time is measured from the time when the protective action is recommended by the Emergency Controller and is accepted by the CCT Disaster Operations Centre.

1 NNR letter k12131.1N, dated 28 February 2005, serves to confirm that the "NNR report on the Technical Basis for Emergency Planning at Koeberg Nuclear Power Station" and documents the current position of the NNR in the Technical Basis for the Emergency Planning at Koeberg Nuclear Power Station. The NNR Board has approved the report and the table under section 12.0, Practical Application of the Technical Basis" on page 18 of the report forms the basis of Emergency Planning and is documented as such in Appendix 2.

APPENDIX 3

PROTECTIVE ACTIONS

1.0 Protective Actions are intended to prevent or mitigate the radiological or psychological consequences of a nuclear incident for the on and off-site populations. As a general principle, it must be appropriate to implement a protective action when the risk associated with the averted dose exceeds the social and monetary risks associated with that action.

2.0 The Protective Actions that may be recommended by Eskom and ordered by the Joint Decision-making Team are:

2.1 **Notification of the Public** – Warning to the public, which may minimise the emergency response, time required to complete a Protective Action.

2.2 **Ad Hoc Respiratory Protection** – Reduction of aerosol inhalation provided using common household and personal items.

2.3 **Protective Action Zone Isolation** – Prevention of access to, or removal of property from, a radiologically affected area to prevent or minimise the consequences of exposure to ionising radiation or contamination.

2.4 **Sheltering** – Protection from exposure to radioactivity which may be afforded by buildings of a permanent nature.

2.5 **Relocation** – The non-urgent removal or extended exclusion of people from a contaminated area to avoid chronic radiation exposure following the passage of a radioactive plume.

2.6 **Thyroid Protection** – Administration and ingestion of stable iodine (KIO_3) which may minimise the exposure of the thyroid to radioactive iodine.

2.7 **Evacuation** – Urgent removal of a population from an area to avoid the imminent or actual threat of acute radiation exposure, e.g. from an airborne radioactive plume.

2.8 **Analysis and Control of Foodstuffs** – Measures leading to the control of food and water contaminated by a release of radioactivity. Food banning in potentially affected areas must be recommended by Eskom and ordered by the Joint Decision-making Team as a preventive measure, pending analysis.

2.9 **Decontamination of Persons** – Usually persons may be decontaminated in ordinary shower facilities, followed by a change of clothing.

2.10 **Use of Stored Animal Feed** – The transfer of domestic animals from free-range feeding to stored foodstuff may reduce the uptake of radioactive materials resulting from deposition.

2.11 **Infrastructure Decontamination** – Decontamination of areas, buildings, equipment, roads, land, etc, is a protective measure that applies to the intermediate or late phase. Decontamination involves the removal of radioactivity from an affected area to another location where it must be less hazardous.

2.12 **Permanent Resettlement** – The permanent removal or exclusion of people from a contaminated area, where return is not foreseeable, to avoid chronic radiation exposure.

APPENDIX 4

CLASSIFICATION OF NUCLEAR EMERGENCIES

UNUSUAL EVENT

An abnormal occurrence which indicates an unplanned deviation from normal operations; the actual or potential consequences of which require the partial or limited activation of the emergency plan.

ALERT

A situation exists that could develop into a SITE or GENERAL EMERGENCY and therefore requires notification of all emergency personnel in order to obtain a state of readiness to respond.

SITE EMERGENCY

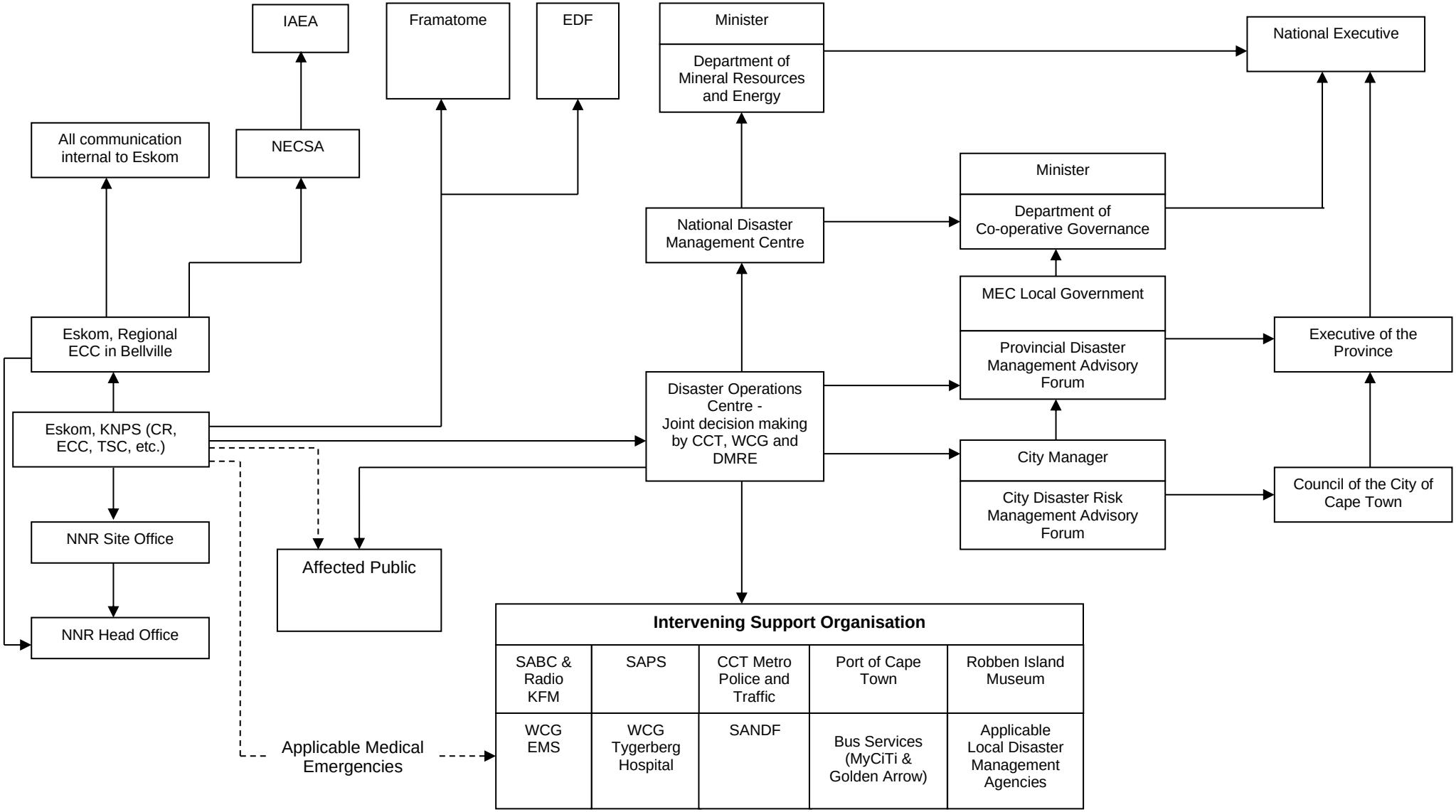
An emergency condition exists that poses a serious radiological hazard on-site but poses no serious radiological hazard beyond the public exclusion boundary.

GENERAL EMERGENCY

An emergency condition exists that involves, or potentially involves, a serious radiological hazard beyond the public exclusion boundary. The declaration of a General Emergency at Koeberg Nuclear Power Station must result in the declaration of a National Disaster under the Disaster Management Act.

APPENDIX 5

PRINCIPAL LINES OF COMMUNICATION



APPENDIX 6

EMERGENCY RESPONSE TIMES FOR WARNING, NOTIFICATION AND STAND-BY PERSONNEL

Warning and notification of protective actions to the public must be achieved within the specified time frames and sectors:

- Site and PAZ – 15 minutes, throughout 360°.
- UPZ (5 – 10 km) – 30 minutes, 67,5° downwind sector.
- UPZ (10 – 16 km) – 45 minutes, 67,5° downwind sector.

Response times for Koeberg Nuclear Power Station stand-by personnel (for Alert and higher emergency classifications):

- Emergency Controller to initiate relief of Shift Manager: Within one hour of call out.
- Standby ECC personnel: Within one hour of call out.
- Standby personnel to activate Bellville ECC: Within two hours of call out.

Response times for Disaster Coordinating Team:

- CCT and WCG representatives must assemble at the DOC within one hour after initial notification.
- DMRE representatives to the NDMC should report as soon as possible after the declaration of a General Emergency.

APPENDIX 7

EMERGENCY INTERVENTION LEVELS FOR EARLY PHASE PROTECTIVE ACTIONS

Protective Action [4]	**Dose**		
	Whole body [mSv]	**Lungs** [1] **or any Single Organ Preferentially Irradiated** [mSv]	**Thyroid** [2, 3] [mSv]
Sheltering			
UPPER DOSE LEVEL	50	500	-
LOWER DOSE LEVEL	5	50	-
Evacuation			
UPPER DOSE LEVEL	500	5000	-
LOWER DOSE LEVEL	50	500	-
Stable Iodine Administration			
UPPER DOSE LEVEL	-	-	500[2, 3]
LOWER DOSE LEVEL	-	-	50[2, 3]

[1] In the event of α-irradiation of the lung, the numerical values apply to the product of RBE and absorbed dose in mGy.

[2] For practical reasons, one intervention level is recommended for all age groups.

[3] Equivalent dose to the thyroid.

[4] At the upper dose level, the protective action must be recommended. At the lower dose level, a specific protective action should be recommended.

APPENDIX 8

LEVELS OF AVERTABLE DOSE THAT JUSTIFY INTERVENTION

Protective Action	Generic intervention level
Sheltering	10 mSv
Evacuation	50 mSv
Iodine Thyroid Blocking	100 mSv

NOTE 1: *The intervention levels in Appendix 7 must be used to determine protective actions during the initial stages of an emergency.*

NOTE 2: *Protective actions may be justified using levels of avertable dose listed above later in an emergency.*

APPENDIX 9

EMERGENCY INTERVENTION LEVELS FOR TEMPORARY RELOCATION AND PERMANENT RESETTLEMENT

Period	Intervention Level	Action / Response
1st Month	30 mSv effective dose	Temporary relocation
Subsequent month	10 mSv effective dose	Temporary relocation
Lifetime (50 years)	1000 mSv effective dose	Permanent resettlement

APPENDIX 10

GENERIC ACTION LEVELS FOR FOODSTUFFS

FOODS DESTINED FOR GENERAL CONSUMPTION		
Isotope Group	**Radionuclides**	**Generic Action Levels (kBq/kg)**
1	Cs-134, Cs-137, Ru-103, Ru-106, Sr-89, I-131	1
2	Sr-90	0,1
3	Am-241, Pu-238, Pu-239, Pu-240, Pu-242	0,01
MILK, INFANT FOODS, AND DRINKING WATER		
4	Cs-134, Cs-137, Ru-103, Ru-106, Sr-89	1
5	Sr-90, I-131	0,1
6	Am-241, Pu-238, Pu-239, Pu-240, Pu-242	0,001

Notes:

These levels apply to situations where alternative food supplies are readily available. Where food supplies are scarce, higher levels may apply. They also apply to food prepared for consumption, and would be unnecessarily restrictive if applied to dried or concentrated food prior to dilution or reconstitution

For practical reasons the criteria for separate radionuclide groups must be applied independently to the sum of the activities of the radionuclides in each group.

Classes of food that are consumed in small quantities (e.g., less than 10 kg per person per year), such as spices, which represent a very small fraction of the total diet and would make very small additions to individual exposures, may have action levels ten times higher than those for major foodstuffs.

APPENDIX 11

TOTAL EFFECTIVE DOSE GUIDANCE FOR EMERGENCY WORKERS

TASKS	(b) (c) E_T^{WG} [mSv]
Type 1 • Life-saving actions • Prevention of core damage or given core damage to prevention of a large release.	< 500(a)
Type 2 • Prevent serious injury. • Avert a large effective dose. • Prevent the development of catastrophic conditions. • Recovery of reactor safety systems. • Off-site ambient dose rate monitoring (gamma dose rate)	< 100
Type 3 • Short-term recovery operations. • Implement urgent protective actions. • Environmental sampling.	< 50
Type 4 • Longer-term recovery operations. • Work not directly concerned with a nuclear accident.	Occupational exposure guidance

(a) This dose may be exceeded if the benefits to others clearly outweigh their own risk, but every effort must be made to keep dose below this level, and below the thresholds for deterministic biological effects. The workers must be trained in radiation protection and understand the risk that they face.

(b) Every reasonable effort should be made to keep the dose to women of reproductive capacity as far below 100 mSv as is practicable. Women who know or suspect that they are pregnant should not be assigned duty as an emergency worker.

(c) The equivalent dose to skin of any emergency worker undertaking actions during an emergency must be controlled to ensure that a dose limit of 5000 mSv is not exceeded.

NOTE 1: *Workers who undertake actions in which the dose may exceed the occupational maximum single year dose limit, must be volunteers.*

NOTE 2: *For Eskom staff the person responsible for compliance with these requirements is the Eskom Emergency Controller with assistance from the Health Physics Controller.*

NOTE 3: *The Eskom Emergency Controller must authorise dose extensions for emergency workers who are Eskom employees or Eskom contractors. The Joint Decision-making Team must authorise dose extensions for all other emergency workers.*

NOTE 4: *Workers must not normally be precluded from incurring further occupational exposure because of doses received in an emergency exposure situation. However, qualified medical advice must be obtained before any such further exposure.*

NOTE 5: *The implementing procedures must provide emergency worker turn-back dose guidance expressed as a function of integrated external gamma exposure.*

APPENDIX 12

EMERGENCY PLAN FACILITIES AND EQUIPMENT

The following facilities must be maintained in a continuous state of readiness to implement the plan:

1) HVCR – High Voltage Control Room

2) ECC – Emergency Control Centre

3) AECC – Alternate Emergency Control Centre

4) TSC – Technical Support Centre, situated in the ECC

5) ATSC – Alternate Technical Support Centre

6) Joint Media Centre, situated at Bellville

7) ESL – Environmental Survey Laboratory

8) AESL – Alternate ESL

9) Medical and Decontamination Facilities, Medical Centre

10) Radiation Casualty Facility, Tygerberg Hospital

11) KNPS Fire Station

12) Vehicles allocated to the Emergency Plan for radiological surveillance, or identified as being required to support emergency response.

13) SABC – Emergency Studio

14) CCT – Disaster Operations Centre

15) Emergency kits allocated to:

- District Sampling Teams
- Robben Island Museum(Retained at the ESL for conveyance by RP Monitor)
- WCG Emergency Medical Service / METRO

16) KNPS Site Muster Stations

17) KNPS Site Emergency Cabinets

18) KNPS Central Alarm Station

APPENDIX 12 (continued)

EMERGENCY PLAN FACILITIES AND EQUIPMENT

19) Public Notification System

20) Redundant communications system in all Emergency Control Centres.

21) City of Cape Town – Disaster Management units situated at Melkbosstrand and Atlantis, and CCT Health Stores.

22) Mass Care Centres

NOTE 1: *Applicable Mass Care Centres will be selected and allocated emergency equipment upon the declaration of the general emergency. The Relocation Centres will be selected and equipped with the necessary resources during the intermediate or late phase of the nuclear or radiological emergency.*

23) Potassium Iodate storage locations

NOTE 3: *Potassium Iodate (KIO_3) tablets must be analysed for replacement or extension prior to expiry date. Shelf-life extension must be at the discretion and written approval of the Medicines Control Council. The quantity considered to be adequate for protection within the UPZ must be determined, and stored upon receipt, by the CCT. The tablets intended for the protection of the population on Robben Island are stored and controlled by the Safety Officer. The storage on-site of sufficient tablets to provide for the protection of site personnel must be controlled by the Eskom Chief Medical Officer. On-site tablets will be available from:*

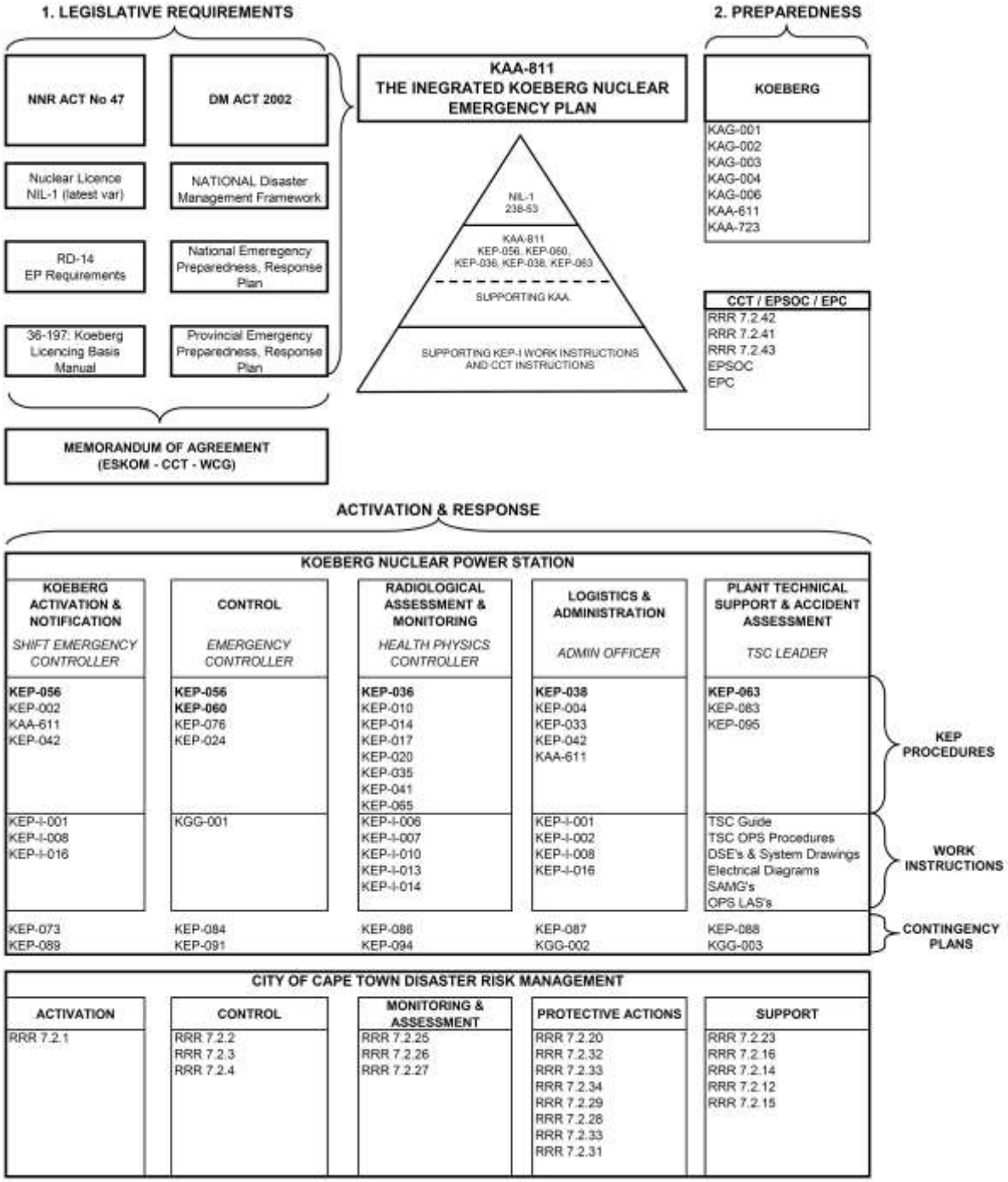
- *Muster Stations*
- *Emergency Control Centre*
- *Medical Centre*
- *Main Gate (Access Control Point #2)*
- *19 m level, electrical building*
- *Emergency Plan Vehicles and Survey kits*

The CCT is responsible for the issue of KIO_3 to the public, supported as necessary by the appropriate municipal departments.

24) Evacuation route infrastructure (i.e., roads and bridges)

APPENDIX 13

INTEGRATED KOEBERG NUCLEAR EMERGENCY PLAN DOCUMENT HIERARCHY



APPENDIX 14
GENERIC CRITERIA FOR TRANSITIONING TO AN EXISTING EXPOSURE SITUATION

Period	Intervention Level	Action / Response
Year	20 mSv effective dose	Transitioning to an existing exposure situation
Full period of in utero development	20 mSv equivalent dose to a foetus	

APPENDIX 15

LIST OF INTERVENING ORGANISATIONS

The following organisations are recognised within the Koeberg Nuclear Power Station Radiological Release Hazard Disaster Risk Management Plan as being responsible for managing, or implementing, one or several emergency preparedness and response functions for a nuclear or radiological emergency resulting from the operation of Koeberg Nuclear Power Station:

1. CCT: Disaster Risk Management Centre
2. National Department of Mineral Resources and Energy
3. WCG Disaster Management (incl. districts)
4. National Disaster Management Centre
5. CCT: Electricity
6. South African Broadcasting Corporation
7. CCT: Transport, Roads, and Stormwater
8. South African Police Service
9. CCT: Fire & Rescue Service
10. South African National Defence Force & South African Air Force
11. CCT: Metropolitan Police
12. National Department of Correctional Services
13. CCT: Traffic Services
14. National Department of Environmental Affairs
15. CCT: Environmental Health
16. National Department for Water & Sanitation
17. CCT: 107 PECC
18. National Ports Authority
19. CCT: Law Enforcement & Specialized Services
20. Port of Cape Town
21. CCT: Social Developments
22. Robben Island, Department of Arts and Culture
23. CCT: Transport Network Management
24. WCG: Traffic
25. CCT: Human Settlements
26. WCG: Dept. of Agriculture
27. CCT: Sports & Recreation
28. WCG: Social Development
29. CCT: Supply Chain Management
30. WCG: Department of Health - EMS (METRO)
31. CCT: Transport of Cape Town
32. WCG: Department of Education
33. CCT: Solid Waste
34. WCG: Department of Environmental Affairs & Development Planning
35. National Sea Rescue Institute (NSRI)
36. WCG: Department of Health – Tygerberg Hospital
37. SPCA
38. MyCiti
39. Golden Arrow Bus Company
40. Eskom Distribution, Transmission and Generation Divisions for the applicable service delivery areas of the City

***NOTE**: This is not an exhaustive list of organisations, and the extent of involvement of these organisations depend on the specifies of the emergency. A full list of organisations and their functions are outlined in the CCT Koeberg Nuclear Power Station Radiological Release Hazard Disaster Risk Management Plan.*

APPENDIX 16

JUSTIFICATION

Revision 4

1. Full Review to address findings from audits.
2. Added additional parties to the “Seen and Accepted” list.
3. Re-ordered the main structure of the document – added a safety assessment section, split the responsibilities section into Emergency Preparedness and Emergency Response sections be more aligned with 238-53.
4. Updated the reference for the Eskom EP corporate standard from GGS-1301 to 238-53.
5. Clarified the scope of the document, to state the procedure is applicable when Koeberg “potentially” requires off-site assistance.
6. Fixed the statement that the scope applies to the “general public” as opposed to the “public that could be directly affected by a nuclear incident”
7. Changed the spelling of the term “Disaster Co-ordination team” to “Disaster Coordinating Team” to align with the use of the term in the CCT RRR plan.
8. Changed the definition of the Disaster Coordinating Team to clarify that it’s a team and not a concept.
9. Updated the names and references of various organisation and designations, including the Western Cape Government, City of Cape Town Disaster Risk Management, Eskom Holding SOC Ltd., etc.
10. Editorial change to the definition of ionising radiation to make it more understandable.
11. Added a definition of PECC, OSC, ENF.
12. Updated the old KNEP document reference to the new Radiological Release Response document reference numbers.
13. Added KAG-003 and KEP-017 as applicable documents.
14. Clarified the Safety Assessment section.
15. Corrected mistakes in references and other numbers.
16. Removed requirements on the NNR as these are already covered in the relevant legislation. However, a description of some of the NNR’s roles in preparedness for and response to nuclear emergencies have been kept.
17. Added the specific statement that the declaration of a UE doesn’t require the full activation of the ERO, and that formal notification (using the Emergency Notification Form) is also not required. Revision 4 (continued)

APPENDIX 16 (continued)

JUSTIFICATION

Revision 4 (continued)

18. References to the “Integrated Koeberg Nuclear Emergency Plan” were changed to references to a specific appendix or section in this document or were changed to a brief explanation of the process / plans.
19. Removed the requirement to deploy an Eskom Technical Advisor to the SABC.
20. Listed some specific means of ensuring the safety of persons on-site during an emergency.
21. Noted that the public information publications contain instruction on what to do when sirens are activated.
22. Described the means of ensuring emergency workers are accounted for.
23. Noted that the withdrawal of protective actions (as stated in RD-014) is equivalent to “transfer to an existing exposure situation”, used in latest international guidance.
24. Clarified that the equipment, facilities, and supplies that are listed in Appendix 12 are important supplies and that it’s not an exhaustive list of emergency supplies.
25. Added references to training documents.
26. Added a detailed description of the arrangements for performing public notification.
27. Removed individual records requirements for each section of Appendix 1 and added the records requirements in the applicable “Activation” sections of Appendix 1.
28. Corrected the mandatory requirement to inform the RNET during UEs, as RNET will not necessarily be active during an Unusual Event.
29. Added the Koeberg Administrative Office (AO) as function in Appendix 1.
30. Added the action that the AO will assist with emergency notifications as appropriate.
31. Updated Appendix 1’s responsibilities with respect to providing a service and informing other parties, to align with current practices and processes.
32. Various editorial changes to Appendix 1.
33. Appendix 1: Moved some of the late phase actions that will be initiated in the early phase to the early phase section, e.g., zone isolation, traffic control etc.
34. Specified that the protective actions implemented under late phase in Appendix 1 are limited to “intermediate and late phase” actions.
35. Rearranged the late phase actions in Appendix 1 to have a more logical flow.

APPENDIX 16 (continued)

JUSTIFICATION

Revision 4 (continued)

36. Rephrased “hotspots” to “area of higher relative activity concentration”, since “hotspots” already has a specific definition for operational radiation protection at KNPS.
37. Appendix 1, section 13 - moved the primary responsibility for contamination monitoring and decontamination of the public from the Koeberg Emergency Controller to the Disaster Coordinating team to align with the Disaster Management Act.
38. Removed the FTL / Field Teams’ responsibilities w.r.t food monitoring because only the Koeberg Environmental Sampling teams will be involved in the collection of samples and not the early phase field teams (who only do emergency sampling).
39. Added a definition for emergency sampling.
40. Added guidance (emergency intervention levels) for terminating protective actions and transitioning to an existing exposure situation (taken from IAEA guidance).
41. Removed the Damage Control Store as this is not an official storage location for emergency equipment required in the Emergency Plan.
42. Removed reference to the Atlantis subzone to align with the latest CCT Disaster Risk Management emergency response procedures.
43. Expanded the CCT emergency store list to be more complete.
44. Updated Appendix 13 – the Emergency Plan procedure hierarchy – added new procedures and rearranged the procedure grouping to improve clarity.
45. Added the responsibility for the CCT and WCG to respectively maintain their resources required by the Emergency Plan in a state of readiness.
46. Moved the intervention level for the distribution of stable iodine (Appendix 7) to its own line to improve clarity.
47. Removed redundant information (i.e., information repeated in Appendix 1) from section 8.8 (General Emergencies).
48. Corrected incorrect Appendix references throughout the document.
49. Indicated in Appendix 5: Principal Lines of Communication that the RNET is the link between the ECC and the all-emergency communication within Eskom.
50. Appendix 1 was updated to state that the Duty Disaster Risk Management Coordinator is responsible to staff the DOC but that the representatives in the DOC are normally called out via the PECC 107.
51. Added a definition for “Koeberg” and changed free-standing references to “Koeberg” to align with this new definition.

APPENDIX 16 (continued)

JUSTIFICATION

Revision 4 (continued)

52. Replaced the “Department of Energy” (DoE) with the “Department of Mineral Resources and Energy” (DMRE).
53. “Minister of Energy” replace with “Minister of Mineral Resources and Energy”.
54. Changed “levels of government” to “spheres of government” throughout the document to ensure consistency.
55. Change “facility” to “KNPS”.
56. Added the definition for “nuclear installation” as defined in the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999).
57. Where the term “nuclear installation” referred to Koeberg Nuclear Power Station it was replaced with “KNPS”.
58. Where the term “nuclear installation” referred to nuclear installations in general the term was kept the same.
59. The term “Disaster Co-ordinating Team” was replaced with the term “Disaster Coordinating Team” to align with the City of Cape Town RRR procedures.
60. Added the following statement: “During a nuclear or radiological emergency the Koeberg Security Services will assist the Koeberg (Shift) Emergency Controller with the activation of the standby team, notifying of stakeholders, implementing on-site protective actions, and performing mustering and accountability These activities will be performed above and beyond the normal operational duties, which will be continue to be performed during an emergency”
61. Added a statement to 7.7.5 that the use of Operational Intervention levels are also described in the procedures that address the application and implementation of intervention an action levels.
62. Added a list of intervening organisations in Appendix 15, and referenced the list in the definition of “Intervening Organisation”.
63. Added Nuclear Installation License NIL-01 (current variation) under reference documents.
64. Eskom updated the labels of relevant documents in the Referenced Documents section to ensure that each document label includes a revision number or an authorisation date.
65. Added the following definition for “National Executive”: “National executive here refers to the head of the Cabinet of South Africa – the President of South Africa”.

APPENDIX 16 (continued)

JUSTIFICATION

Revision 4 (continued)

66. Added the statement: Eskom is responsible for covering the cost for the establishment, implementation and management of the Integrated Koeberg Nuclear Emergency Plan in so far as it relates the Koeberg Nuclear Power Station.

67. The following definition of Notification added: “Actions taken to inform or alert relevant parties or organizations as part of emergency response.”

68. Paragraph 8.3.2 (notifications of the Shift Emergency Controller) rephrased to improve clarity.

69. Replaced Koeberg Shift Manager with Koeberg Shift Emergency Controller throughout the document because the Emergency Plan Duties assigned to the Shift Manager can also be performed by any qualified SRO.

70. Changed the statement that the Koeberg Shift Emergency Controller can order (rather than advise/recommend) protective actions, when there is a need for urgent protective actions in the public domain and where the local authority is not yet in a position to order such protective actions.

71. Stated that public notification will be initiated by the activation of public notification sirens which will alert people to the emergency condition by both an alarm tone and a message.

72. Added a statement that the initial instructional messages to the public will be followed up by routine broadcasts.

73. Added the statement to steps 4.5, 5.5 and 6.6 of Appendix 1 were updated to state that the Duty Disaster Risk Management Coordinator is responsible to staff the DOC. However, the DOC staff members are normally called out via the PECC 107. CCT RRR procedures 7.2.1 & 7.2.2 were also referenced.

74. Inserted paragraph 8.3.4 stating that the Regional Nuclear Emergency Manager is responsible for the activation and operation of the Eskom Regional Nuclear Emergency Team situated in Bellville in accordance with the process outlined in Appendix 1.

75. Removed the indicator in Appendix 1 that the NNR will provide a mandatory service with the activation of the DOC. Indicated that the NNR may provide a service (as appropriate / required) during the activation of the DOC when a General Emergency has been declared.

76. Added the section 8.17 International Support and added paragraph 8.17.1 stating that provisions are in place for Framatome, EDF, INPO/WANO and the IAEA to provide support during a nuclear or radiological emergency at Koeberg Nuclear Power Station in accordance the relevant procedure in Appendix 13.”

77. An item labelled “Evacuation route infrastructure (i.e., roads and bridges)” was added to Appendix 12.

APPENDIX 16 (continued)

JUSTIFICATION

Revision 4 (continued)

78. The variation of NIL-1 in Appendix 13 and the referenced documents was changed to reference the latest variation of NIL-1.

79. Changed the definition of the Joint Decision-making Team, it is now defined as a team convened at the Disaster Operations Centre, under direction of the Head: DRMC or the Duty Coordinator: DOC, consisting of senior representatives of the Department of Mineral Resources and Energy's Nuclear Liability, Safety and Emergency Management directorate, Western Cape Government Disaster Management, City of Cape Town Disaster Risk Management, and any other member from the three spheres of government co-opted into the team. The Joint Decision-making team is responsible for evaluating and ordering public protective actions and other off-site response actions.

80. Changed reference from the Disaster Coordinating Team to the Joint Decision-making Team in cases where decision-making is done w.r.t protective actions or emergency doses extensions.

81. Removed a duplicate paragraph in section 7.4 of paragraph 8.5.2

82. Reference to section 7.2 added to section 7.1.

83. Rephrased section 7.1 to refer to the generic term "national legislation" as opposed to only the Disaster Management Act because the requirements in the applicable sections are taken from various acts. This change is editorial.

84. Added the note the top of section 7.2 to state that the responsibilities listed below are intended to be descriptive and not prescriptive.

85. Removed the abbreviation "KOU".

86. Fixed the statement that a National Disaster is declared on recommendation of the Disaster Coordinating Team to state that City of Cape Town's Head of the Disaster Risk Management Centre, in consultation with the Joint Decision-making Team, will immediately inform the National Disaster Management Centre through the Head of the Western Cape Disaster Management Centre of the magnitude and severity of the event and request the disaster classification of the event.

87. Clarified the requirement to "activate the Koeberg ECC and assume emergency control within 1 hour" to state that the Koeberg ECC should be activated and handover commenced within 1 hour.

88. Rephrased paragraph 7.2.3 around the declaration of a National State of Disaster to align with the Disaster Management Act and the National Disaster Management Plan.

89. Added reference to the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999) in the statement that the Minister of Mineral Resources and Energy is responsible to address claims in excess of the financial security provided by the holder of a nuclear installation to clarify that this requirement comes from the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999).

APPENDIX 16 (continued)

JUSTIFICATION

Revision 4 (continued)

90. Added an editorial note to Appendix 2 for reference purposes.

91. Clarified the definition of the public exclusion boundary for accuracy purposes.

92. Added the statement that evacuation route infrastructure is expanded and maintained to ensure that the evacuation times in Appendix 2 are not challenged by population growth.

93. Changed the term “private sector” to “private and voluntary sectors” because it’s a more accurate term for the organisations involved.

94. Added the definitions for the Disaster Risk Management Centre, Head of the Disaster Risk Management Centre, and Private and Voluntary Sectors.

95. Added the Joint Decision-making Team and the Disaster Coordinating Team as headings to the Appendix 1 flowchart to specify in for which emergency response actions these two teams are required to support, concur or be informed.

96. Moved the National Executive and the Minister of Cooperative Governance and Traditional Affairs from the headings of Appendix 1 to the notes section to make space for the Joint Decision-making Team and the Disaster Coordinating Team.

97. Changed the disaster classification process as defined in the text of the document and the Appendix 1 flowchart (section 9) to align with the Disaster Management Act, Act 57 of 2002.

98. Clarified the difference in responsibilities between the Joint Decision-making Team and the Disaster Coordinating team by refining the definitions and the responsibilities in the text of the procedure.

99. A note was added to Appendix 1 that pets will be decontaminated at mass care centres (same as people) where needed but that the decontamination of people will take preference.

100. Removed the following statement in paragraph 7.2.17 because Koeberg support capabilities have not been formally register with the IAEA: *“…or the IAEA may request assistance from South Africa in case of a nuclear or radiological emergency elsewhere.”*

101. Rephrased section 7.14.4 regarding exercises to the follow:
“Exercises are conducted to ensure that staff responsible for critical response functions participate in an exercise at least once a year.”

102. Added a direct link between Koeberg and WCG Emergency Medical Services / METRO in Appendix 5 to indicate the notification of the EMS / METRO during medical emergencies at Koeberg requiring off-site assistance.

103. Split the step for the provision of emergency medical treatment of contaminated casualties in Appendix 1 into two separate steps: on-site and off-site, with the highest qualified individual being responsible on-site and WCG EMS / METRO and Tygerberg Hospital being responsible off-site.

104. Added the TRCF manual as an applicable document and referenced the manual in Appendix 1 under medical treatment of contaminated casualties off-site.