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Enquiries: GFA Pretorius
Our reference: NIL28B0010
Your reference:

18 April 2011

Chief Executive Officer
Necsa
P O Box 582
PRETORIA
0001

FOR THE ATTENTION OF DR RM ADAM

Dear Dr Adam

NUCLEAR INSTALLATION LICENCE NIL-28 (VARIATION 1)

1. Please find enclosed one controlled copy of Nuclear Installation Licence No. NIL-28 (Variation 1), being the nuclear authorisation issued to Necsa for the operation of the Vaalputs Radioactive Waste Disposal Facility. This document must be controlled in accordance with the Necsa arrangements for controlled documents.

2. Following the approval of NNR Authorisation Change Request NL27-NAR-0151 this authorisation is hereby revised. See sections B-3 of Nuclear Installation Licence NIL-28 to authorise the receipt and disposal of Necsa Low Level Waste at the Vaalputs Radioactive Waste Disposal Facility.

3. Necsa is reminded that the format for correspondence between **Necsa and the NNR on** the **Vaalputs Radioactive Waste Disposal Facility** are as follows:

   i. Correspondence **from Necsa to the NNR:** NIL28AXXXX, where "XXXX" is sequential numbers starting with 0001.
   ii. **Correspondence from the NNR to Necsa:** NIL28BXXXX, where "XXXX" is sequential numbers starting with 0001.
   iii. **NNR Authorisation Requests (NAR's)** will be numbered as follows: NIL28-NAR-XXXX, where "XXXX" is sequential numbers starting with 0001.
   iv. **Authorisation Change Requests (ACR's)** will be numbered as follows: NIL28-ACR-XXXX, where "XXXX" is sequential numbers starting with 0001.
   v. **Events** will be numbered as follows: NIL28-OCC-XXXX, where "XXXX" is sequential numbers starting with 0001.

2./...

4. The issue of this nuclear authorisation does not relieve Necsa of any obligations under any other legislation.

Yours faithfully

Adv BM Mkhize
CHIEF EXECUTIVE OFFICER

Copy: Group Executive: NTI
LD Records

NUCLEAR INSTALLATION LICENCE No. NIL-28 (Variation 1)

Nuclear Installation Licence No. NIL-28 (Variation 1) issued in terms of the provisions of Section 23 of the National Nuclear Regulator Act, Act 47 of 1999 (hereinafter referred to as the Act)

to

THE SOUTH AFRICAN NUCLEAR ENERGY CORPORATION (Necsa)
(hereinafter referred to as the Licensee)

for

the operation of the **Vaalputs** National Radioactive Waste Disposal Facility, which is located on adjoining portions of the farm Vaalputs (portion 1, Geelpan and portion 2, Garing) and Bokseputs (portion 1, Stofkloof), in the magisterial district of Kamiesberg in the Northern Cape Province, known as the Vaalputs site. The site on which the Vaalputs facility is sited is shown in Figure 1.

The Nuclear Installation Licence is not transferable and is effective from the date of issue, subject to adherence with –

(i) the Conditions of Authorisation in PART A; and
(ii) the Specified NNR Requirements in PART B.

Issued at Centurion on this 18th day of April 2011

CHIEF EXECUTIVE OFFICER

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PART A: CONDITIONS OF AUTHORISATION

1. General

a. In these conditions any reference to an agreement, approval, directive, specification, notification, process or any formal communication between the NNR and the licensee, and vice versa, shall be deemed to be a reference to a written document.

b. In these conditions any reference to approved processes and or procedures shall be deemed to be licensee processes and or procedures.

c. In these conditions any reference to NNR approved processes and or procedures shall be deemed to be licensee processes and or procedures that have been reviewed and approved by the NNR.

d. The licensee must ensure that once approved no alteration or amendment is made to the NNR approved processes and or procedures unless the NNR has approved the said alteration or amendment.

e. Where in these conditions, the NNR requires any matter to be approved or to be carried out only with its consent or to be carried out as it directs, the NNR may –
   i. from time to time modify, revise or withdraw, either wholly or in part, any such approval, directive or consent;
   ii. approve, either wholly or in part, any modification or revision or any proposed modification or revision to any matter for the period being approved.

f. The English text of the licence is the official text of the licence.

2. Facility Description

Facility Description: **Vaalputs**

a. The South African National Radioactive Waste Disposal Facility, Vaalputs, is located 90 km south-east of the town of Springbok on adjoining portions of the farm Vaalputs (portion 1, Geelpan and portion 2, Garing) and Bokseputs (portion 1, Stofkloof), in the magisterial district of Kamiesberg in the Northern Cape Province and is approximately 10 000 ha in area.

b. The currently authorised disposal area is situated inside a securely fenced area on the Vaalputs site as indicated in figure 2. The dimensions of this securely fenced area are 900m x 1100m.

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c. Within this securely fenced area is the currently authorised disposal area with dimensions of 700m x 500m.

d. The disposal area is surrounded by a 200 meters exclusion zone on all sides.

e. Included in the exclusion zone is a building which has an administrative area and an operational area.

   i. The administrative area of said building contains offices, storage facilities, an instrument room, etc.
   ii. The operational area contains a radioactive waste transport vehicle reception area, a transfer area, shielded temporary storage area, a controlled radiological operations area, a decontamination area, a ventilation system for the building and a mechanical workshop.

3. Scope of Actions that may be undertaken by Vaalputs

a. **Vaalputs** is authorised for the following activities –

   i. Receipt of Low Level Waste in approved waste packages.

   ii. Temporary Storage of waste packages in the shielded storage area in the reception hall.

   iii. Transfer of radioactive material and contaminated equipment to other facilities authorised to receive such material and equipment.

   iv. Disposal of Low Level Waste packages in near surface trenches.

4. Demarcation of Site Boundary, Site Plans, Designs and Specifications

a. The licensee must maintain a plan of the site (hereinafter called the site plan) showing the location of the boundary of the site and every building, plant or facility on the site.

b. The licensee must demarcate the boundaries of the site by fences or other appropriate means and all such fences or other means used for this purpose must be properly maintained.

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c. Prior to making any change to the site, which impacts or has the potential to impact on health, safety, or the environment as contemplated in the Act, the licensee must submit to the NNR an amended site plan and schedule, for approval.

d. The licensee must submit, to the NNR, such plans, diagrams, designs, specifications, or other information relating to the buildings, plants or any other facilities on the site as the NNR may specify.

5. Physical Security

a. The licensee must ensure the safety and security of the –
   i. site; and
   ii. all installations and persons thereon,

b. The physical protection system must be designed to protect against the design basis threat, theft or diversion of radioactive material and sabotage.

c. The licensee must prevent unauthorised persons from entering the site or any part thereof.

6. Transport

a. The transportation of radioactive material or any equipment or objects contaminated with radioactive material must be carried out in compliance with the relevant provisions of the International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Material, 2005 Edition, IAEA Safety Standard Series No. TS-R-1, IAEA, Vienna, 2005.

b. The licensee must ensure that no radioactive material is brought onto the site or conveyed from the site, except in accordance with processes approved by the NNR.

c. All on site transport of radioactive material or any equipment or objects contaminated with radioactive material must be carried out in compliance with processes approved by the NNR.

d. The licensee must keep a record of all radioactive material consigned to and from the site. Such record must –

   i. contain particulars of the amount, type and form of such radioactive material, the manner in which it was packaged, the

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name and address of the person to whom it was consigned to or from and the date when it left or arrived on the site.

ii. be preserved for a period acceptable to the NNR.

e. The licensee must not undertake any transport of radioactive material to sites, installations or persons not appropriately authorised to receive such material.

7. Restrictions on Dealing with the Site

a. The licensee may not lease, assign, or grant possession to use –

i. the site, or any portion thereof; or

ii. any radioactive material,

to any person not in possession of an appropriate nuclear authorisation, where such an authorisation is required.

b. The licensee must inform the NNR in writing of such intention and request the revocation or amendment of the relevant part of the authorisation as appropriate.

c. The licensee remains responsible for compliance with all conditions of authorisation until such time as said conditions are revoked or amended.

d. The licensee must prevent persons from carrying out any unauthorised actions on the site.

e. The licensee must ensure that no radioactive material intended for use in connection with any new installation, process or modification to the existing installation is brought onto site for the first time without consent of the NNR.

f. The licensee must ensure that no radioactive material is stored on the site except in accordance with processes approved by the NNR.

g. The licensee must ensure that every person authorised to be on the site receives instructions (to the extent that this is necessary having regard to the circumstances of that person being on the site) as regards the risks and hazards associated with the nuclear installations and their operation, the precautions to be observed in connection therewith and the actions to be taken in the event of an accident or emergency on the site.

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h. The licensee must implement approved processes for suitable training of all persons who have responsibilities for any operations which may affect safety.

i. The licensee must ensure that suitable and sufficient methods are employed on the site for the purposes of informing persons thereon of each of the following matters –
   i. the meaning of any warning sign used on the site;
   ii. the location of any exit from any place on the site, where such exit is provided for use in the event of an emergency;
   iii. the measures to be taken by such persons in the event of any emergency.

8. Radiological Protection

a. The licensee must implement the approved processes for the purposes of ensuring radiological protection of employees, members of the public and the environment, both on the site and off the site, as a consequence of authorised actions.

b. The normal operational exposure of individuals must be restricted to ensure that neither the effective dose nor the equivalent dose to relevant organs or tissues exceeds any relevant dose limit specified by the NNR.

c. The licensee's radiological protection processes must, under all operating states of the authorised actions or facilities, ensure that–
   (i) effective radiation doses, including committed effective doses, to persons;
   (ii) the number of people who are exposed; and
   (iii) the likelihood of incurring exposures to radiation,
   are kept as low as reasonably achievable.

d. A dose register of every occupationally exposed worker must be established and maintained in a form acceptable to the NNR. The licensee must retain the register for a period of at least fifty years from the date of last entry.

e. The licensee must implement NNR approved processes for the purposes of control of radioactive sources.

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9. Medical Surveillance and Health Register

a. A comprehensive medical surveillance programme and health register must be maintained in a form approved by the NNR.

b. All entries in the health register must be made by an appointed medical practitioner or a person so authorised.

c. The appointed medical practitioner must inform the employee of any medical condition, which could have arisen as a result of occupational exposure to radiation.

d. The licensee must retain the register for a period of at least fifty years from the date of last entry.

e. An employee or former employee must have right of access to his medical records and health register at all times.

10. Radioactive Waste Management

a. The licensee must implement NNR approved processes for the minimisation and safe management of radioactive waste on the site.

b. The radioactive waste management programme must –
   i. ensure the identification, quantification, characterisation and classification of any radioactive waste generated;
   ii. provide for the necessary steps leading to safe clearance, authorised discharge, disposal, reuse or recycling; and
   iii. provide for the safe storage of radioactive waste between any waste management processes.

c. The safety of radioactive waste storage options must be assured for the envisaged period of storage.

11. Documents, Records, Authorities and Certificates

a. The licensee must keep adequate records to demonstrate compliance with the conditions of this licence.

b. The licensee must implement and maintain an approved document management system to ensure that every document required, every record made, every authority, consent or approval granted and every directive or

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certificate issue in pursuance of these conditions of licence is preserved for 30 years or such other period as the NNR may approve.

c. Operational reports must be submitted to the NNR at predetermined periods, approved by the NNR, and must contain such information as the NNR may require on the basis of the nuclear installation's safety assessment.

12. Events (including Incidents or Accidents) on the Site

a. The licensee must implement NNR approved processes for the notification, recording, investigation and reporting and closeout of events (incidents, accidents, etc.) occurring on the site –
   i. in accordance with requirements specified by the NNR;
   ii. as required by any other condition attached to this licence; or
   iii. as the licensee considers necessary.

13. Emergency Planning and Preparedness

a. The licensee must implement NNR approved processes related to preparedness for and response to any event, (incident, accident, etc) or other emergency arising on the site and their associated impacts.

b. The licensee must ensure that such processes include procedures to ensure that all persons, in the employ of the licensee, who have duties in connection with such processes are properly trained and instructed in –
   i. the performance of the processes;
   ii. the use of any equipment that may be required; and
   iii. the precautions to be observed.

c. Where such processes require the assistance or cooperation of, or it is expedient to make use of the services of any person, local authority or any other body; the licensee must ensure that such persons, local authority or other body are consulted in the periodic review and update of such processes.

d. The licensee must ensure that all such processes are exercised and tested at such intervals and at such times and to such extent as the NNR may specify or, where the NNR has not so specified, as the licensee considers necessary to ensure their continued viability.

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14. Environmental Protection

a. The licensee must implement NNR approved processes for the protection of public health and the environment arising from the nuclear installation's authorised activities.

b. The licensee must ensure that no radioactive effluent release is made from the site, except in accordance with procedures and processes approved by the NNR.

c. The licensee must implement NNR approved processes and procedures for environmental monitoring and surveillance.

15. Duly Authorised and Suitably Qualified and Experienced Persons

a. The licensee must implement NNR approved processes and procedures for ensuring that only suitably qualified and experienced persons perform any duties, which may affect the safety of operations on the site, or any duties assigned by or under these conditions of licence.

b. Such processes and procedures must make provision for the appointment, as appropriate, of duly authorised persons to control and supervise operations, which may affect plant or facility safety.

16. Safety Committee

a. The licensee must implement processes and procedures relating to safety committee(s) to oversee and manage its safety responsibilities and to which it refers for consideration and advice –
   i. matters required by or under this licence;
   ii. safety policies, procedures, processes or documents required by these conditions of licence or as the NNR may specify and any subsequent alteration or amendment to said processes or documents;
   iii. any matter affecting safety on or off the site which the NNR may specify; and
   iv. any other matter, which the licensee considers should be referred to a safety committee.

b. The terms of reference of any such safety committee must be submitted to the NNR.

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c. The licensee must ensure that the members of any such committee are suitably qualified and experienced, so as to enable said committee to consider any matter likely to be referred to it and to advise the licensee authoritatively and, so far as practicable, independently.

d. The licensee must ensure that a safety committee shall consider or advise only during the course of a properly constituted meeting of that committee. Minutes must be kept of all such meetings.

17. Safety Documentation

a. The licensee must implement NNR approved processes and procedures for the production and assessment of safety cases consisting of documentation to justify safety during the following lifecycle phases of the installation –
   i. Siting;
   ii. Design;
   iii. Manufacture of component parts;
   iv. Construction;
   v. Commissioning;
   vi. Operation;
   vii. Termination of operation;
   viii. Decontamination; and
   ix. Decommissioning.

b. The safety case must include a risk assessment and demonstration of compliance with the Regulations on Safety Standards and Regulatory Practices as well as any other requirements and guidance prescribed by the NNR.

c. The licensee must establish and implement processes for the periodic and systematic review and reassessment of safety cases.

d. The licensee must if so directed by the NNR, carry out a review and reassessment of safety and submit a report of said review and reassessment to the NNR at such intervals, within such period and for such matters or operations as may be specified in the directive.

18. Quality and Safety Management

a. Quality and Safety Management processes and procedures must be established, implemented and maintained in respect of all matters that may affect safety, in order to ensure compliance with the conditions of this licence.

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b. The licensee must comply with all NNR approved or NNR accepted documents contained in the Necsa Process Based Licensing (PBL) Manual.

c. The licensee must submit to the NNR such copies of records or documents made in connection with the aforementioned processes and procedures as the NNR may specify.

19. Modification to Design of Existing Plant or Facility

a. The licensee must comply with NNR approved processes and procedures relating to control of modification to the design of existing plant, facility or system design, including modifications that may be of a temporary nature.

b. The aforesaid processes must provide for the classification of modifications according to their safety significance.

c. Where appropriate, modifications must be divided into stages and where the NNR has so specified the licensee must not commence nor thereafter proceed from one stage to the next of the modification, without the prior approval of the NNR.

d. The processes must include a requirement for the provision of adequate documentation to justify the safety of the proposed modification and shall, where appropriate, provide for the submission of such documentation to the NNR.

20. Construction and Commissioning of Plant or Process

a. The licensee must implement NNR approved processes and procedures relating to the construction and commissioning of any plant, facility or process.

b. Where appropriate, construction and commissioning of the plant or process may be divided into stages. If so specified by the NNR, the licensee must not commence with any stage nor proceed from one stage of the construction or commissioning to the next without the prior approval of the NNR.

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21. Limits and Conditions on Operations

a. The licensee must, in respect of any operation that may affect safety, produce a safety case to demonstrate the safety of the operation and identify the limits and conditions necessary in the interest of safety. The limits and conditions of operation must be submitted to the NNR for approval.

b. The licensee must ensure that operations are controlled and carried out in compliance with NNR approved limits and conditions on operations at all times.

c. Where the person appointed in terms of paragraph 15 (a) identifies any matter indicating that the safety of any operation or the safe condition of any plant is compromised, that person must bring it to the attention of the relevant facility management, who must forthwith take appropriate action to ensure that the matter is appropriately notified, recorded, investigated and reported to the NNR.

d. The NNR may in the interests of safety, at any time revoke, amend or impose any limiting condition on operations.

22. Examination, Inspection, Maintenance and Testing

a. The licensee must implement NNR approved processes for the regular, periodic and systematic examination, inspection, maintenance and testing of all plant, systems, structures and components, including software.

b. The aforesaid processes must provide for the preparation of a plant maintenance schedule for each plant or facility. The licensee must submit to the NNR for its approval, such part or parts of any plant maintenance schedule as the NNR may specify.

c. The licensee must ensure that a full and accurate report of every examination, inspection, maintenance or test, of any part of a plant, system, structure or component, indicating the date thereof and signed by a suitably qualified and experienced person appointed by the licensee, is made.

d. The licensee must ensure, in the interests of safety, that examination, inspection, maintenance and test of a plant or any part thereof is carried out –
   i. only by suitably qualified and experienced persons;
   ii. in accordance with written procedures;

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iii. within the intervals specified in the plant maintenance schedule; and
iv. under the control and general supervision of a suitably qualified and experienced person appointed by the licensee for that purpose.

e. When any examination, inspection, maintenance or test of any part of a plant reveals any matter indicating that the safe operation or safe condition of that plant may be affected, the suitably qualified and experienced person appointed to control or supervise any such examination, inspection, maintenance or test shall forthwith bring it to the attention of the relevant facility management who shall take appropriate action and ensure the matter is then notified, recorded, investigated and reported in accordance with approved processes.

23. Decommissioning

a. The licensee must implement NNR approved processes for the decommissioning of facilities or any part thereof on the site.

b. The Licensee must submit for approval a decommissioning plan, as early as possible in the life cycle of the activity or facility. The plan should be revisited and updated as necessary.

c. A detailed decommissioning plan must be submitted to the NNR for approval prior to the commencement of decommissioning activities.

d. It must be demonstrated to the NNR that sufficient resources will be available from the time of cessation of operations until termination of the period of responsibility.

e. Where appropriate decommissioning may be divided into stages. If so specified by the NNR, the licensee may not commence with nor proceed from one stage of the decommissioning to the next without the prior approval of the NNR.

f. The Licensee must establish and maintain a list of all contaminated areas on the site, which will require decontamination in the future.

24. Organizational Change

a. The Licensee must implement NNR approved processes to control any change to its organizational structure or resources that may have a bearing on health, safety and the environment as contemplated in the Act.

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b. The processes must provide for the classification of changes to the organizational structure or resources according to their safety significance.

c. The processes must include a requirement for the provision of documentation to justify the safety of the proposed change and shall where appropriate provide for the submission of such documentation to the NNR.

25. Financial Security

a. The Licensee must annually provide proof to the NNR that any claim for compensation to an amount contemplated in Section 30(2) of the Act can be met.

26. Public Safety Information Forum

a. In order to inform the persons living in the municipal area in respect of which an emergency plan has been established, in terms of Section 38(1) of the Act, on nuclear and radiation safety matters, the Licensee must establish a Public Safety Information Forum as prescribed.

27. Inspection Programme

a. Pursuant to the provisions of Section 26(2) of the Act, the Licensee must implement an inspection programme to ensure compliance with all conditions of the nuclear installation licence.

28. Display of the Nuclear Installation Licence

a. To ensure public access to the conditions specified in this licence, the Licensee must at all times display copies of this Nuclear Installation Licence at the entrance to the installation in the following languages – English, SeTshwana and Afrikaans.

b. The Licensee must provide to the NNR documented proof that the translations into SeTshwana and Afrikaans are true and accurate translations of the original English text.

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PART B: SPECIFIED NNR REQUIREMENTS FOR THE VAALPUTS RADIOACTIVE WASTE DISPOSAL FACILITY

B.1 The approved Waste Acceptance Criteria (WAC) for Vaalputs is document NL28/VLP-WAC-01 (Rev 6): *"Waste Acceptance Criteria for Vaalputs"*.

B-2 The licensee must comply with the requirements, as per the NNR requirements documents, listed in the table below –

Document number	Description
RD-0014 (Rev 0)	Emergency Preparedness and Response Requirements for Nuclear Installations
RD-0016 (Rev 0)	Requirements for authorisation Submissions Involving Computer Software and Evaluation Models for Safety Calculations
RD-0024 (Rev 0)	Requirements on Risk Assessment and Compliance with Safety Criteria for Nuclear Installations
RD-0026 (Rev 0)	Decommissioning of Nuclear Facilities
RD-0034 (Rev 0)	Quality and Safety Management Requirements for Nuclear Installations
LD-1079 (Rev 1)	Requirements in Respect of Licence Change Requests to the National Nuclear Regulator

B-3 Only Low Level Waste originating from the Koeberg Nuclear Power Station and the South African Nuclear Energy Corporation (Necsa) may be received for disposal at Vaalputs.

B-3 Only Low Level Waste complying with the Vaalputs Waste Acceptance Criteria referenced in B-1 above may be received for disposal at Vaalputs.

B-4 For any other waste which is considered for disposal at Vaalputs, prior approval for such disposal must be obtained from the NNR.

B-5 Waste packages not complying with the Vaalputs Waste Acceptance Criteria referenced in B-1 above may not be disposed of at Vaalputs without prior approval from the NNR.

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B-6 Storage of waste packages in the shielded storage area is limited to:

i. A maximum of fifty (50) concrete waste packages.
ii. A maximum of one hundred and twenty (120) 210 litre steel waste packages.
iii. Waste packages complying with the Vaalputs Waste Acceptance Criteria.
iv. Stacking of containers is limited to a maximum of two (2) tiers high.

B-7 The approval process for waste packages must be submitted to and accepted by the NNR.

B-8 The following **Waivers** to the Vaalputs Waste Acceptance Criteria, document NL28/VLP-WAC-01 (Rev 6), are approved:

i. **Waiver WA2001/01 (Rev 01)**
The Historical Waste Containers from the Koeberg Nuclear Power Station, listed in Appendix A to VA0336, may be accepted for disposal at Vaalputs without complying with the WAC requirement of having a "Historical Data Pack".

ii. **Waiver WA2001/02 (Rev 01)**
The Historical Waste Containers from the Koeberg Nuclear Power Station listed in Appendix A to VA0336 and drilled as part of the "Freestanding Water Verification Test" may be accepted for disposal at Vaalputs.

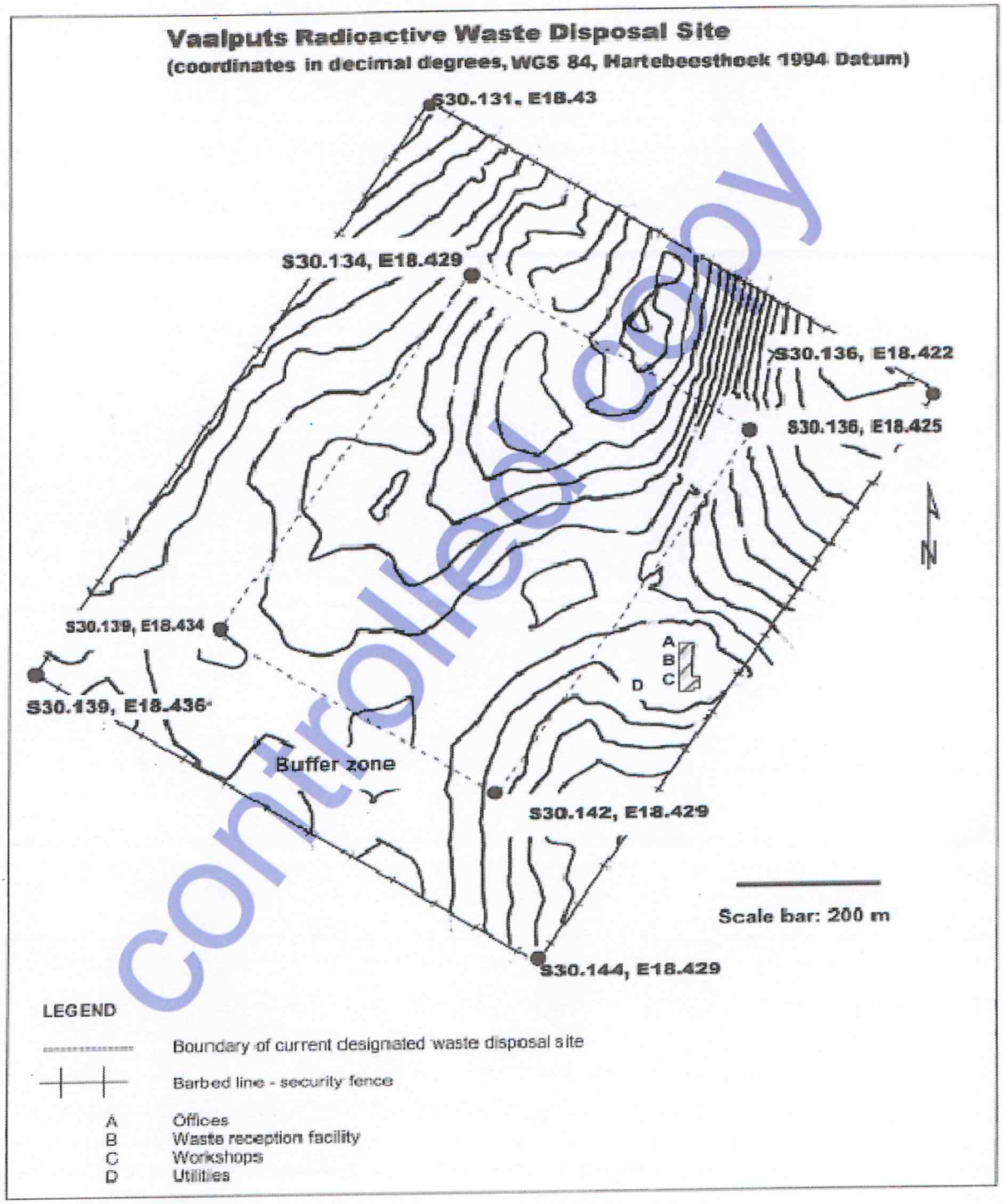
iii. **Waiver WA2001/03 (Rev 01)**
Waste from the Koeberg Nuclear Power Station containing plastic, manufactured from halogen-based compounds may be received and disposed of at Vaalputs.

iv. **Waiver WA2001/04 (Rev 01)**
Waste Containers from The Koeberg Nuclear Power Station containing injectable foam in the annulus between the containers and the steel liner may be received and disposed of at Vaalputs.

v. **Waiver WA-2009/02 (Rev 0)**
Low Level Waste contained in 100 litre steel drums may be received and disposed of at Vaalputs.

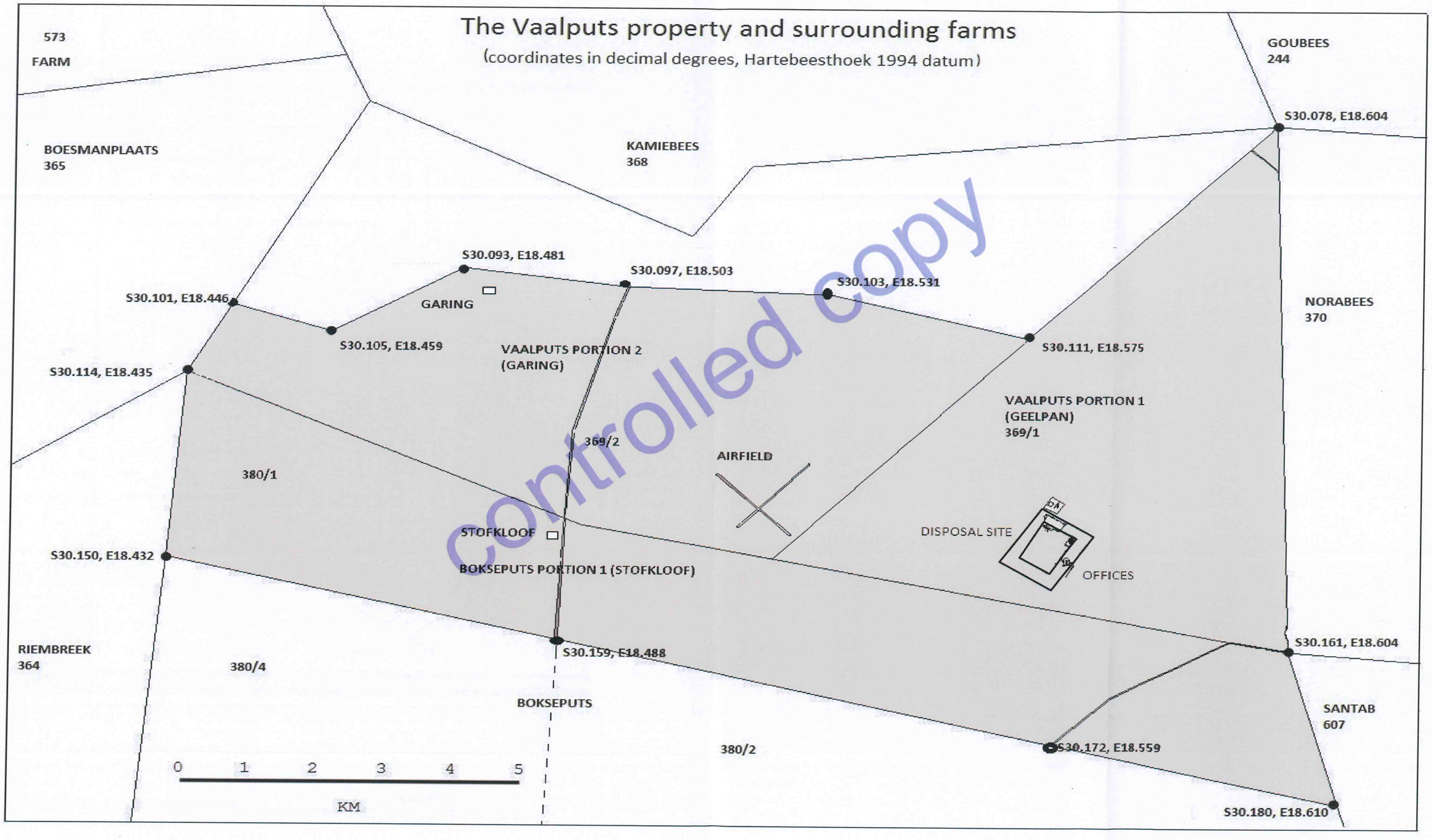
vi. **Waiver WA-2009/01 (Rev 0)**
The five hundred and eleven (511) waste packages from The Koeberg Nuclear Power Station with contact dose rates in excess of 2 mSv/h, but less than 10 mSv/h, listed in Table 1 of the attachment to VA0549 may be accepted and disposed of at Vaalputs.

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Figure 1: Currently authorised Vaalputs disposal area.



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Figure 1: Location of the Vaalputs