TERMS OF REFERENCE FOR THE APPOINTMENT OF A SERVICE PROVIDER TO DEVELOP A STANDARDIZED COST ESTIMATE METHODOLOGY FOR THE DECOMMISSIONING POLICY OF NUCLEAR FACILITIES FOR A PERIOD OF 12 WEEKS

1 BACKGROUND

1.1 South Africa's nuclear programme dates as far back as 1948, with the inception of the Safari Research Reactor in 1965, the Koeberg Nuclear Power Plant in 1985, and the Vaalputs radioactive waste disposal facility in 1986. The South African nuclear value chain of the nuclear fuel cycle had reached its highest peak during the 1970's and 1980's, and that prompted for its self-sufficiency goal.

1.2 The self-reliant goal meant that South Africa had to complete its value chain from mining of uranium, to the conversion of uranium, enrichment process, fuel fabrication, electricity generation and nuclear waste management.

1.3 The nuclear facilities (e.g. Koeberg nuclear power plant and Safari research reactor) as licensed by the National Nuclear Regulator, will be decommissioned when they reach their end of life.

1.4 The South African definition of Decommissioning is consistent with that of the International Atomic Energy Agency (IAEA). According to the 2017 South African National Report on the Compliance to the Obligations on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Decommissioning is defined as:

"Actions taken at the end of the useful life of a facility, other than a repository or disposal facility, in retiring it from service with adequate regard for the health and safety of workers and members of the public and protection of the environment. Actions include shutdown, dismantling and decontamination, care and maintenance." This means once a nuclear facility reaches its end of life, specific actions (such as shutdown, dismantling, decontamination, and care

and maintenance) will be taken or implemented, to ensure the safety of the workers, the public and the environment.

1.5 Currently the main decommissioning activities taking place in South Africa are associated with the historical strategic nuclear facilities within the Pelindaba site. The funding thereof is in terms of section 55 (2) of the Nuclear Energy Act, 1999 (Act No. 46 of 1999).

1.6 The decommissioning activities in South Africa are currently managed as part of the nuclear licensing condition of the National Nuclear Regulator, instructing for conceptual decommission plans to be submitted for approval prior to granting of the license. It is important that the costs associated with these decommissioning activities be understood with clear and appropriate decisions taken as to the best international practices and the principles applied thereof.

1.7 The need for the Decommissioning Policy is based on the 2005 Radioactive Waste Management Policy and Strategy (RWMPS), which is to minimise the burden on future generations, decommissioning and closure of facilities should be implemented as soon as practicable. This point draws attention to the need for a decommissioning policy that will ensure appropriate decommissioning strategies are implemented by nuclear facilities on time to reduce the burden on future generations.

1.8 In 2016, South Africa successfully hosted the Integrated Regulatory Review Service (IRRS) Mission, which was a peer review on the regulatory infrastructure under the auspices of the International Atomic Energy Agency. The IRRS Mission Report recommended for Government to develop a national policy for decommissioning of nuclear facilities.

1.9 Currently there is no national framework detailing how to decommission nuclear facilities. Therefore, it would be prudent for government to develop a decommissioning policy so that the nuclear license holders can do activities related to nuclear decommissioning effectively, whilst taking into account the safety principles and socio-economic factors.

1.10 One of the main challenges that the decommissioning policy needs to address is the need to ensure adequacy of funds for decommissioning. This means that the national policy needs to outline how decommissioning funds should be quantified, and how operators of nuclear facilities should make provisions for decommissioning in the future.

1.11 As part of the policy development process, the initial stage is that of data collection and identification of key issues. The development of a standardised cost estimate methodology becomes an important deliverable towards addressing the main challenges and the outlook of decommissioning in South Africa. The aim is to develop a standardised methodology for quantifying the costs of decommissioning of any type of nuclear facility in South Africa.

1.12 In parallel, the Discussion Paper on nuclear decommissioning will be published by Department, with the intent to obtain views from the general public and the interested stakeholders. These views will need to be reasonably covered by the policy. The developed standardised cost estimate methodology and the inputs from the public, will feed into the next stage of developing a draft decommissioning policy.

1.13 The establishment of the Decommissioning Policy is included as one of the strategic objectives of the Department of Energy, which is to Improve Security of Energy Supply. The South African national nuclear legislative framework will be improved, with due consideration of other existing legislations, to achieve the goal of a sustainable nuclear programme. The development of Decommissioning policy addresses the fundamental safety principle of the role of government in establishing an effective legal and governmental framework for safety.

2 OBJECTIVES

The objective of the study is to develop a standardised decommissioning cost estimate methodology for South Africa through the following phases:

2.1 The benchmarking exercise on nuclear decommissioning policies of other countries, and their costing methodologies.

2.2 Option studies to assess and determine the optimal decommissioning approaches and their cost implications, for each of the different types of nuclear facilities in South Africa.

2.3 Development of a standardised decommissioning cost estimate methodology and its implications (i.e. nuclear safety, socio-economic, and legislative).

2.4 Recommended standardised decommissioning cost estimate methodology and its implementation steps.

3 SCOPE OF WORK

3.1. The service provider is expected to deliver the work through four (4) phases. The key outputs from each of the 4 phases are as follows:

3.1.1. Benchmarking exercise report on nuclear decommissioning policies of other countries, and their cost estimate methodologies.

3.1.2. Option studies report on decommissioning approaches for each of the different types of nuclear facilities, and their cost implications.

3.1.3. Report on a standardised decommissioning cost estimate methodology and its implications (i.e. nuclear safety, socio-economic, and legislative).

3.1.4. Report on recommendation for a standardised decommissioning cost estimate methodology and its implementation steps.

3.2. The service provider is expected to develop a standardised decommissioning cost estimate methodology that is compressive, through the following deliverables:

3.2.1. **Conduct a Benchmarking exercise on:** (i) A historical overview of the various national decommissioning programmes and the applicable legislative framework of selected countries (i.e. includes United Kingdom, Belgium, Russian Federation, China, United States of America, France, Germany, Slovenia and Spain);. (ii) Description of cost estimate methodologies implemented by the selected countries. The methods of collecting funds taking into account the decommissioning approaches, and the estimated timelines for the decommissioning phases of different nuclear facilities should be included.

3.2.2. **Option studies for decommissioning approaches used by the selected countries and the cost implications**. Do a comparative assessment of each of the various decommissioning approaches for each type of nuclear facility, and their cost implications, as well as potential impact within the South African environment. The following should be included in the assessment:

a. An outline of the pros and cons of each of the approaches with reference to the financial, regulatory, socio-economic, and legislative framework.

b. Measures to be taken when a nuclear facility is prematurely or permanently shut down; and the possible situations where the liability for decommissioning may become the responsibility of government.

c. The description of the oversight functions (including the processes used) in the benchmarked countries to ensure financial accountability.

d. The description of the assessment processes of decommissioning costs, incorporating the lessons learned, successes and failures and the reasons thereto.

e. The description of how the decommissioning funds are sourced and accumulated for different types of nuclear facilities.

f. Indicate the recommended optimal decommissioning approaches and their financial implications, for the different types of nuclear facilities in South Africa; including the oversight function, sourcing of decommissioning funds, assessment processes of decommissioning costs.

3.2.3. **Development of cost estimate methodology** – The service provider must develop a quality assured decommissioning cost estimate methodology that would enable calculation of cost estimates (including the assumptions made) for nuclear decommissioning. The methodology should consider or include the following:

a. The optimal decommissioning approaches for the different types of nuclear facilities in South Africa with the associated implications (nuclear safety, socio-economic, financial, and legislative).

b. The following cost elements should be outlined: Activity-Dependent Costs; Period-Dependent Costs; Collateral and Special Item Costs; Contingency; Scrap and Salvage costs. Cost elements should cover the different types of nuclear facilities, for all the decommissioning phases.

c. The applicable cost elements for all decommissioning activities (i.e. starting from planning phase, pre-decommissioning actions, the transition phase from shutdown to decommissioning, facility shutdown activities, procurement of general equipment and material, decontamination and dismantling activities, management of the resulting waste, storage and disposal, up to the final remediation of the site) should be clearly indicated.

d. The methodology should be flexible to include all supporting activities, such as nuclear security, surveillance and maintenance; site restoration, clean-up and landscaping; project management, engineering and site support, physical protection, research and development, etc.

e. The methodology should consider categorising estimated costs as fixed and variable.

f. The output of the methodology should include numeric and graphical illustration of the cost estimates.

g. A comparative chart or table presenting the adjustment of the methodology for the different types of facilities must be included. The presentation of the methodology should include the Work Breakdown Structure (WBS).

h. The legislative impact of the methodology as applied to the different types of facilities must also be clearly presented.

i. Any methodology sensitivities, uncertainties and risks that may arise as a result of technical issues (e.g., early site closure, regulatory requirements, etc.) as well as non-technical issues (e.g., socio-economic factors etc.) that may impact on funding estimates and utilisation must be indicated.

3.2.4 **Recommendations** – The Service Provider should make a recommendation of the standardised cost estimate methodology for South Africa that reflects on the following:

a. The cost elements for all decommissioning activities within the decommissioning phases.

b. Optimal decommissioning approaches for the different types of nuclear facilities and the associated strategies of sourcing of funding.

c. The nuclear safety, socio-economic, financial, and legislative implications.

d. Optimal implementation strategy and associated challenges.

e. The methodology should be easily understood and transparent; should be based within IAEA principles and South African laws.

4 PAYMENTS

4.1 The Department will not make an upfront payment to a successful service provider. Payment will only be made in accordance to the milestones that will be agreed upon by both parties and receipt of an original invoice.

5 REPORTING REQUIREMENTS AND PROGRESS MEETINGS

5.1 It is envisaged that the DoE will require an initial meeting with the successful service provider to agree on the project process and options to be investigated. Bi-weekly meetings will then follow to discuss the progress of the project until completion.

5.2 Progress meeting feedback shall be held as and when necessary, but at least three times for a period of 12 weeks. The venue for these meetings will be at **Matimba Building, 192 Visagie Street, Pretoria**-the DoE Head Office (Pretoria). Representatives from the service providers' organisation shall be obliged to attend at their own costs. Where applicable, conference calls shall be held to facilitate such meetings.

6 DOCUMENTATION

6.1 For all the identified milestones of the project, the successful service provider shall submit two (2) copies of progress reports after completion of each phase. The progress reports shall be organised in a systematic way, with adequate

indexing. The progress reports shall contain all documents produced including copies of minutes of meetings.

6.2 The copyright in the end product will vest in DoE and be presented with its logo, and it will be at liberty to use the report and results as deemed necessary.

7 COMPLETION DATE

7.1 The duration of the project is 12 weeks after signing of the contract with the successful service provider.

8 TAX CLEARANCE CERTIFICATE

8.1 The potential service provider must ensure compliance with their tax obligations.

8.2 The potential service provider is required to submit their unique personal identification number (pin) issued by SARS to enable the organ of state to view the taxpayer's profile and tax status.

8.3 Application for tax compliance status (TCS) or pin may also be made via e-filing. In order to use this provision, taxpayers will need to register with SARS as e-filers through the website www.sars.gov.za.

8.4 The potential service provider may also submit a printed TCS together with the proposal.

8.5 In proposals where consortia / joint ventures / sub-contractors are involved, each party must submit a separate proof of TCS / pin / CSD number.

8.6 Where no TCS is available but the potential service provider is registered on the central supplier database (CSD), a CSD number must be provided.

9 CONFIDENTIALITY OF INFORMATION

9.1 The names of all the members of the service provider's team must be disclosed for the prior approval of DoE. Any changes, replacements and additions should be submitted for prior approval of DoE.

9.2 A bidder must disclose if affiliated with a firm or entity that has been hired (or is proposed to be hired) by DoE or the lender.

9.3 All members will have to sign a Non-Disclosure Agreement before project commencement, and may be required to undergo security screening and tests as the DoE deems necessary.

10 TERMS AND CONDITIONS

10.1 Service Level Agreement will be entered into with the successful service provider which will include, *inter alia*, obligations of the DoE and the successful service provider.

10.2 The DoE reserves the right to appoint more than one service provider for the project.

10.3 The successful service provider must develop detailed project schedule/ plan.

10.4 The successful service provider will be required to submit payment schedule providing projections for the period of 12 weeks on work performed.

10.5 DoE reserves the right to exclude any member whom DoE deems, at its own discretion. In this case the service provider will be requested to replace the excluded member with another suitable candidate. The replacement candidate must submit the above mentioned resume' and declaration and be approved by DoE in writing.

10.6 The service provider shall disclose all information in its proposal regarding any interests that may result in an actual or perceived conflict of interest.

10.7 Please note that DoE reserves the right to disqualify any service provider in circumstances where a conflict of interest exists or is perceived to exist or where a service provider has failed to disclose any conflict of interest or any other material information that may have affected the award of the service.

11 COMPULSORY INFORMATION SESSION

11.1 A compulsory information session will be held on **15 October 2019** at 10H00 at the Department of Energy, Corner Visagie and Paul Kruger Streets; Pretoria at 10H00.

12 EVALUATION METHODOLOGY

12.1 COST

12.1.1 The service provider will be requested to provide a quote regarding the work to be undertaken for this project, and such should include travelling and accommodation cost. These costs should be in line with the National treasury costs containment measures.

12.1.2 The total cost must be VAT inclusive and should be quoted in South African currency (i.e. Rands).

12.1.3 The quotation value must present clear indication of budget allocated for the duration of the project which will be payable by the DoE to the service provider upon satisfactory work delivery and provision of monthly report.

12.1.4 The proposed payment schedule that does not match the quantity and quality of work done shall not be considered.

12.1.5 The service provider should provide hourly rates as prescribed by Department of Public Service and Administration (DPSA), Auditor- General (AG) or the body regulating the profession of consultant(s).

12.2 BROAD BASED BLACK ECONOMIC EMPOWERMENT

12.2.1 Provisions of the Preferential Procurement Policy Framework Act (PPPFA) 2017 and its Regulation will apply in terms of awarding points.

12.2.2 Bidders are required to submit original and valid B-BBEE Status Level Verification Certificates or certified copies thereof together with their bids, to substantiate their B-BBEE rating claims.

12.2.3 Bidders who do not submit their B-BBEE status level verification certificates or are non-compliant contributors to B-BBEE will not qualify for preference points for B-BBEE.

12.2.4 A trust, consortium or joint venture must submit a consolidated B-BBEE status level verification certificate for every separate bid.

12.2.5 **Bidders other than** Exempted Micro Enterprises **(EME's)**, MUST submit the following documents:

(a) Verification agencies accredited by SANAS

(b) Registered auditors approved by IRBA

12.2.6 **Bidders who qualify as EME's,** MUST submit the following documents:

(a) Sworn affidavit signed by the EME representative, and attested by a commissioner of oaths.

12.2.7 The table below depicts the B-BBEE status level of contribution:

B-BBEE Status Level of Contributor	**Number of points (80/20 system)**
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

12.3 COMPANY EXPERIENCE

12.3.1 Service providers should have at least five (5) years of experience in the nuclear energy sector, preferably with demonstrated expertise of developing cost estimate methodologies, and have a grasp of the dynamics and challenges of the nuclear energy sector.

12.3.2 Proof must be provided from at least three contactable reference letters indicating that similar projects were executed will be an added advantage**. Failure to attach letters indicating proof will result in the service provider forfeiting points**.

12.4 Qualifications of Team Leader and Team Members

12.4.1 Team leader must possess at least a Postgraduate Degree in Science, or Engineering, or Law, or Finance, or Business Economics.

12.4.2 Team member(s) must possess at least a Degree in Science, Engineering, Law, Finance, or Business Economics.

12.4.3 Curriculum Vitae and certified copies of certificates of the team leader and team members must be attached to the technical proposal. Failure to attach copies, bidders will forfeit functionality point.

12.4.4 The role, location and commitment of each member in the team during the assignment must be clearly specified.

12.5 Experience of Team Leader and Team Members

12.5.1 The team leader must have at least 5 years of experience in the nuclear sector, including development of cost estimate methodologies.

12.5.2 Team member(s) of the team must have at least 3 years of experience in the nuclear sector, and the knowledge of developing cost estimate methodologies will be an added advantage.

12.6 Project Plan

12.6.1 The service provider must provide:

a. A project proposal that demonstrates comprehension and competence to deliver on what is required in line with the scope of work under section 3.
b. A preliminary project plan outlining key activities, milestones, timeframes, and a schedule of resources to be committed to the project.

13 EVALUATION PROCESS

13.1 Bids will be evaluated on **80/20 point system** as outlined in the PPPFA of 2017. The proposals will be evaluated in two phases:

Phase 1: Bidders will be evaluated based on functionality. The minimum threshold for functionality is **70 out of 100 points**. Bidders who fail to meet minimum threshold will be disqualified and will not be evaluated further for price and preference points for B-BBEE.

Evaluation criteria	*Score*	*Weight*
1. Company Experience		**20**
1.1 Service providers should have at least recent five (5) years of experience in the nuclear energy sector, preferably with demonstrated expertise of developing cost estimate methodologies; and have a grasp of the dynamics and challenges of the nuclear energy sector	5 years or more = 5 points 6 years = 4 points **5 years = 3 points** 4 years = 2 points 3 years or less = 1 point	15
1.2 Proof from at least three (3) contactable letters references indicating that similar projects were executed.	5 letters or more = 5 points 4 letters = 4 points **3 letters = 3 points** 2 letters = 2 points 1 letter = 1 point	5
2. Qualifications and Experience of Team Leader and Team Members		**40**
Qualifications:		
2.1 Team leader must possess at least a Postgraduate Degree in Science or Engineering or Law or Finance, or Business Economics.	***(team leader qualifications)*** PhD = 5 points Master's degree = 4 points **Honours degree =3 points** Degree = 2 points Diploma **or** Certificate =1 point	10
2.2 Team member(s) must possess at least a Degree in Science, Engineering or Law or Finance, or Business Economics.	***(team member qualifications)*** Master's degree or higher = 5 points Honours degree =4 points **Degree =3 points** Degree =2 points Diploma or Certificate = 1 point	8
2.3 Curriculum Vitae and certified copies of certificates of the team leader and team members are attached to the technical proposal.	CV attached with 5 or more projects = 5 points CV attached with 4 projects = 4 points **CVs attached with 3 projects = 3 points** CV attached with 2 projects = 2 points CV not attached = 1 point	2
2.4 The role of each member in the team during the project is clearly specified.	Role of each member clearly specified in detail = 5 points	

Evaluation criteria	*Score*	*Weight*
Experience: 2.5 The team leader must have at least 5 years of experience in the nuclear sector, including development of cost estimate methodologies. 2.6 Team members must have at least 3 years of experience in nuclear sector, including the knowledge of developing cost estimate methodologies.	**Role of each member clearly specified = 3 points** Role of team member only specified = 2 points Role of each member not specified = 1 point **(team leader)** 7 year experience and more = 5 points 6 years experience = 4 points **5 years experience = 3 points** 4 years experience = 2 points 3 years experience and less = 1 point **(team members)** 5 years experience and more = 5 points 4 years experience = 4 points **3 years experience = 3 points** 2 years experience = 2 points 1 year experience and less = 1 point	4 10 6
3 Project Plan The project plan should contain the following: 3.1 Project implementation plan with activities (under section 3) to be implemented, milestones, timeframes, and schedule of resources. 3.2 The Bidder should demonstrate comprehension and competence on how they key outputs (under section 3) will be achieved.	Project plan with detailed activities, milestones, timeframes and resources = 5 points Project plan with detailed activities, timeframes, and milestones = 4points **Project plan with activities, timeframes, and milestones = 3 points** Project plan with activities only = 2 points No project plan attached = 1 point 4 key outputs demonstrated = 5 points **4 key outputs presented = 3 points** 4 key outputs not indicated = 1 point	**40** 20 20
Total		**100**

For purpose of evaluating functionality, the following values will be applicable:

1=	**Very poor**	Will not be able to fulfil the requirements
2=	**Poor**	Will partially fulfil the requirements
3=	**Average**	Will be able to fulfil the requirements
4=	**Good**	Will be able to fulfil better in terms of the requirements adequately
5=	**Excellent**	Will fully fulfil the requirements exceptionally

Phase 2: Price and B-BBEE

Evaluation criteria	***Weight***
Price	**80**
B-BBEE Compliance	**20**

14 FORMAT AND SUBMISSION OF THE PROPOSAL

14.1 All official forms (SBD) must be completed in all respects by service providers. Failure to comply will invalidate a quote.

14.2 Service providers are requested to submit two (2) copies: 1 original plus 1 copy of the proposal and price quotation.

15 CLOSING DATE

15.1 Proposal must be submitted on or before **25 October 2019 at 11H00** at the Department of Energy, Matimba Building, 192 Visagie Street, Corner of Visagie and Paul Kruger Street, Pretoria in the Bid Box marked Department of Energy. **No late quotes will be accepted.**

16 ENQUIRIES

16.1 All technical enquiries to be directed in writing to Mr Katse Maphoto
Tel: 012 406 7498
Email: katse.maphoto@energy.gov.za / Thabiso.pie@energy.gov.za

16.2 All quote enquiries to be directed to Ms Keitumetse Pitse or Rachel
Tel: 012 406 7742/7747
Email: Keitumetse.Pitse@energy.gov.za / rachel.moerane@energy.gov.za