REPORT OF THE NUCLEAR NEW BUILD PROGRAMME PROCUREMENT OF SIXTEEN (16) SERVICE PROVIDERS

Portfolio Committee on Energy

29 November 2016

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1. Introduction

- Cabinet approved Nuclear Energy Policy of 2008, guide Government vision to become self-sufficient in all aspects of Nuclear New Build Programme (NNBP) for Peaceful Uses
- The 2011 National Development Plan (NDP) directs the Government to conduct thorough investigations on different aspects of the Nuclear New Build Programme (NNBP) before a procurement decision is taken.
- More specifically, the NDP directed that South Africa needs a thorough investigation on the implications of *nuclear energy, including its costs, financing options, institutional arrangements, safety, environmental costs and benefits, localisation and employment opportunities, and uranium enrichment and fuel fabrication possibilities.*
- To address NDP directive the Department of Energy, in conjunction with other organs of state (within the Energy Security Cabinet Sub-Committee structures) has, over the past five years, procured various service providers to conduct investigations. The services/feasibility studies were procured to create a framework for the procurement and rollout of the NNBP. These investigations assisted the Energy Security Cabinet Sub-Committee structure in developing various strategies and policies.
- The rationale for commissioning the studies was also informed by need to address IAEA recommendations from INIR Mission and EPREV Mission
- As part of the creation of a framework for procurement and rollout of the NNBP, a need arose to procure additional expert/specialist Service Providers and this is also reported in this presentation.

2. KPMG: Study on comparative analysis of Shale Gas to power versus Nuclear Power in South Africa

Output of the Study:

- Shale Gas has the potential to be a game changer, though at present is not sufficiently developed (economically mineable reserves are unproven) to be considered as a feasible contender in the planning process.
- Gas and Nuclear options must be pursued to ensure that diversification and economic benefits are realised.
- Delaying the next baseload decision may have a severe impact on security of supply. A non-decision can potentially be the most costly outcome due to the broader economic impact.

Way Forward:

- Study was submitted to National Planning Commission and used internally to re-affirm the decision to pursue nuclear power .

Date of Completion, Duration, Cost: 14 March 2012, 2weeks, R 341 002(incl. VAT)

3. KPMG-Benchmark of Procurement Framework

Purpose:

To provide DOE with a broad view of the possible contracting approaches based on those pursued by other countries in their NNBP. This would be used to learn lessons to be incorporated into the approach to be adopted by South Africa.

Outputs (Concluding Remarks):

When deciding on a procurement approach, it is important to consider :

- The "end game": consider sector aspirations and broader national aspirations and imperatives,
- Objectives and roles of key stakeholders and how these can be balanced.

Way Forward:

- End-in-Mind procurement approach adopted by NNEECC in October 2013
  - Procurement of a Programme (not just nuclear power reactors);
  - Department of Energy designated the Procurement Agency for nuclear programme.
- Study tours to vendor countries 2013-14, Inter-Governmental Agreements signed with all nuclear vendor countries and Vendor Parades in 2014-15, Designation of procurement roles 2016.

Date of completion, duration, costs: 21 May 2013, 4 weeks, R 907 708.00

4. INGEROP- Cost of Nuclear Power

Purpose : To provide the DOE with an update on the cost of nuclear power since the release of the IRP 2010-2030.

Output of the study:

- The study provided a Comparison of the main source of data for IRP inputs, previously used the Electric Power Research Institute (EPRI) data which was Western view only.
- The study average capital cost was around 4918 US$/kWe. The fleet approach has a positive cost effect reduction .

Way Forward:

- Recommended the cost data be used for the IRP update input data (previously used Electric Power Research Institute (EPRI) study which was limited.
- Values from the cost study were used as a basis in the Financing Models, Options and Solution study and Economic Impact of Localisation study.
- It informed the need to procure a fleet of 9.6 GWe to benefit from the cost reduction and economic benefit.

Date of completion, Duration, Costs: 21 October 2013, 4 weeks, R 1 005 460

5. INGEROP- Owner Operator and Financing Structures

Purpose:

For DOE to be in a position to identify and establish the appropriate owner-operator and financing structure to source the required capital at both a project and programme level for the nuclear power plant projects (from a single station up to complete fleet taking into account Nuclear Energy Policy 2008)

Output of the study:

- Eskom BAU can be associated with close partnership arrangements, from technology and skills transfer to localization, which may be further enhanced by a minority ownership stake to a strategic partner.
- The South African Nuclear Joint Venture (SANJV) scenario, although more attractive than the traditional BOOT JV scenarios, is also more risky, since the carve-out of Koeberg might be quite complex both from a political and financing point of view.

Way Forward:

- Financial details for option of Koeberg transfer required more in-depth study (including financial model) as well as access to Eskom financials, for which Nuclear Energy Technical Committee gave approval – known as Nuclear Finance Models, Options and Solutions.

Date of completion, Duration, Cost: 30 April 2013, 6 weeks, R 3 601 933

6. Deloitte: Finance Options Models Solutions

Purpose :

To identify and establish the optimum financing structure scenario for the nuclear new build programme.

	Businesses-as-Usual (100% Eskom ownership)	Joint Venture (51% Eskom ownership)	SPV with Vendors (54% Eskom ownership)
Key assumptions	MYPD regulated tariff Corporate finance 10% of debt financing from local debt ECA-backed foreign debt	30 year PPA followed by MYPD regulated tariff Corporate finance 50% of debt financing from local debt ECA-backed foreign debt	30 year PPA followed by MYPD regulated tariff Nuclear Project finance 50% of debt financing from local debt ECA-backed foreign debt
Key outputs	Eskom levelised tariff: R904/MWh 30 year PPA tariff: n/a SA investment: R 4.3 bn Gearing: 99%	Eskom levelised tariff : R901/MWh 30 year PPA tariff: R1,426/MWh SA investment: R 316 bn Gearing: 53%	Eskom levelised tariff: R912/MWh 30 year PPA tariff: R1,204/MWh SA investment: R 183 bn Gearing: 63%

Way Forward:

- Joint recommendation report drafted by National Treasury and DOE
- National Treasury conducted internal analysis in 2015
- Submitted to Cabinet in 2015
  - Any further studies will not provide more accurate answers
- Cabinet resolved to test the market for finance and costs through a competitive procurement process

Date of Completion, Duration, Costs: 8 September 2014, 3 months, R4 250 000

7. Deloitte: Deferred Return on Government Investor Approach

Purpose:

For the Department of Energy to be in a position to identify and establish the impact of deferring the short term Government/strategic investor return on investment on the tariff and the overall return to the Investors over the lifetime of the power plants.

Output of the study:

- The deferral of Government dividends during the Power Purchase Agreement (PPA) period may be an effective way to reduce the impact of new nuclear build on country's electricity tariff.
- A lower Government rate (e.g. 3.5% real / 8.2% nominal) would allow the post-PPA tariff to be more in line with the PPA tariff.

Way Forward:

- This study would be used going forward to assist with justifying the need to reduce the Government return on investment in order to reduce the tariff if necessary.

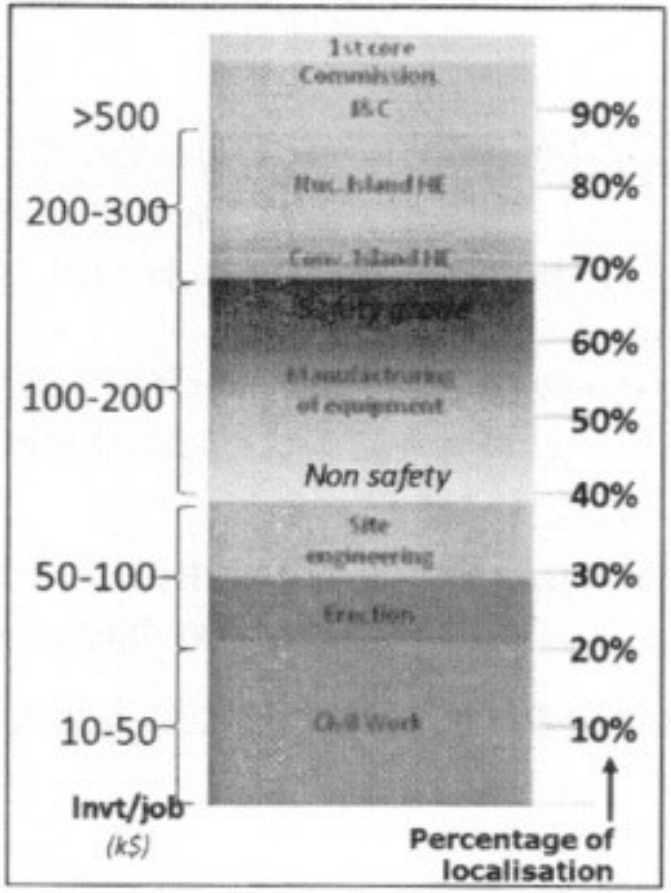
Date of Completion, Duration, Cost: 16 February 2015, 4 weeks, R 995 334 (incl. VAT)

8. Ingerop: Economic Impact of Localization of Nuclear New Build Programme (1/2)

Purpose: To assess the Economic impact of localising the nuclear new build programme. On completion of the study, the Department would be in a position to identify and establish the role of nuclear localisation as a socio-economic development driver amongst others.

Output of the study:

- New manufacturing capacity should also consider non-nuclear markets – (i) Specific market analysis to be done with a manufacturer; (ii) If heavy equipment localisation is decided;
- Get agreement with the Vendor, so that the local manufacturers are immersed in its value chain;



8. Ingerop: Economic Impact of Localization of Nuclear New Build Programme (2/2)

Output of the study (continued):

- Localise "easy" technology for Units 5 - Upper part and assembly of Steam Generators; main coolant line; pressurizer Localise Reactor Pressure Vessel, lower part of Steam Generator, turbine-generator for Units 6;
- Localisation needed to achieve >80% target;
- Industry, Owner, Governmental agency Upfront fuel cycle
- All vendors own the fuel manufacturing technologies
- Few of them have the technologies for mining, conversion or enrichment (in case, other partners should be involved)
- Partnership with foreign suppliers
- Architect-Engineer (AE) capabilities to be developed in RSA with the support of an established nuclear AE.

Way forward: To be determined under Energy Security Cabinet Sub-Committee structures

Date of Completion, Duration, Financial costs: 10 March 2015, 6 months, R 6 137 820

9. Nathan Gift Nhlapho Incorporated : Feasibility Study on Effective Independence of the NNR

Purpose

- The objective of the study address the independence of the NNR based on the IAEA Integrated Nuclear Infrastructure Review (INIR) mission recommendations.

Output of the study:

- Effective separation of the NNR from Minister of DoE and migration to a DEA that is not responsible for promotion of nuclear
- Funding Cost Recovery Model be adopted
- Enforcement Civil Monetary Fines System be adopted

Way Forward: To be determined under Energy Security Cabinet Sub-Committee structures

Date of Completion: 21 October 2013
Duration : 1 month
Financial costs: R496 960

10. Nathan Gift Nhlapho Incorporated : Accession to one of the IAEA liability conventions

Purpose and Overview:

- To Perform a risk assessment associated with the premiums payable by each of Contracting Parties for the Convention on Supplementary Compensation (CSC) and the Vienna Convention.

Outcomes of the Study:

Salient requirements for a accession or ratification of a nuclear liability Convention:

(1) National legislation to align with the elected Convention;

(2) Have a compensation scheme (for nuclear damage) in the national legislation;

(3) The elected Convention approved by: National Assembly, National Council of Provinces (section 231(2) of the Constitution), and Parliament.

Way Forward:

- Consultation with necessary stakeholders is currently is in progress to choose the most appropriate convention with due consideration of the risks.

Date of Completion, Duration, Cost: 19 October 2015, 1 month, R496 960

11. The African Radiation Consultations: The development of Training Programme of 1st Responders

Purpose:

- To develop a Training Programme of 1st Responders for Nuclear and Radiological Emergencies in order to address recommendation of the IAEA EPREV Report.

Output of Study:

- Legislate a requirement for training of nuclear and radiological emergency planning, preparedness and response personnel including first responders and provide a national training infrastructure (*review of existing legislation*);
- Introduce a uniform national training curriculum for the training of nuclear and radiological emergency planning, preparedness and response including first responders;
- Implement the national training programme; and
- Establish or designate a National Training Centre to provide national training.

Way Forward:

- Review of legislation (NNR Act) to enforce a requirement for training of nuclear and radiological emergency functionaries.
- Amend the corresponding plans and Standard Operating Procedures.

Date of Completion, Duration, Cost: 30 March 2015, 8 weeks, R 700 416.

12. Zimkile Consulting: Development of Training Material of 1st Responders for Nuclear & Radiological Emergencies

Purpose:

- To develop training **material** for nuclear & radiological emergency 1st responders.

Output of Study:

- Training material for nuclear and radiological emergency 1st responders
- Training for nuclear and radiological emergency 1st responders conducted for 5 days as a pilot project.

Way forward:

- Accreditation of the developed training material
- National training of all the identified emergency 1st responders
- Inclusion into the proposed IAEA Capacity Building Center

Duration: **5 weeks**
Date of Completion: **17 October 2016**
Costs: **R 469 114. 56**

13. Nathan Gift Nhlapo Incorporated: Mechanism to enforce implementation of corrective actions by municipalities on nuclear emergency

Purpose:

- To develop a mechanism that will allow for enforcement of implementation of corrective actions on nuclear emergency preparedness and response.

Output of study

- Amend relevant sections of the NNR Act to provide legislative authority for the NNR to exercise direct regulatory authority over national, provincial and municipality authorities with regards to nuclear emergency preparedness and response matters; and
- Provide the NNR will direct legislative powers to issue corrective measures and enforce these measures against national, provincial and municipal authorities.

Way Forward

- DoE needs to consult with the Disaster Management Authority on the review and the amendments of the NNR Act and to find concurrence on how S38 of the Act can be enforced by the NNR over national, provincial and municipal authorities.

Date of completion: 22 September 2016
Duration: 4 weeks
Cost of study: R 469,752.00

14. University of Pretoria: A Detailed Financing Model for the Radioactive Waste Management Fund Bill

Purpose:

- To develop a financial model that would assist the Department to more accurately estimate the tariffs from nuclear waste generators for nuclear waste disposal.

Outputs:

- The proposed RWM Fund be structured as a separate (independent) fund within the national waste management system.
- The RWM Fund use levies as the mechanism to accumulate waste generator contributions for the future siting, construction, operation, maintenance, and decommissioning of facilities on the back-end.
- Detailed costing studies be performed by the NRWDI, in collaboration with the waste generators, and coordinated by the RWM Fund.

Way forward:

- The study is been analysed internally and will be submitted to the Director General for approval and consultation with relevant stakeholders as input into finalisation of the Radioactive Waste Management Fund Bill.

Date of Completion, Duration, Cost: 30 October 2016, 3 months, R1 324 680.

15. Mzansi Energy Solutions: Feasibility on the withdrawal of Safeguards Function from NECSA

Purpose :

- To determine an appropriate location of the National Safeguards function with the objective of ensuring independency of the function and maintaining its integrity and confidence in terms of compliance with the international obligations.

Overview :

The Service provider to provide the following:

- Recommend the best option of the organisation to host the safeguards function.
- Provide a detailed report addressing objectives, including organizational impact, legislative provisions, technical competencies, risks, and cost implications for relocating the function.

Output: The study was finalised on 31 October 2016 and is still undergoing review

Way forward: To be determined after completion of the feasibility study

Date of completion: 31 October 2016

Duration: 10 months

Financial costs: R499 780.00

15. Mahlako-A-Phahla Investments: Pre-Procurement Readiness Assessment (1/2)

Purpose

- To conduct an independent assessment of the Department's state of readiness for the procurement for the Nuclear New Build Programme of the Republic of South Africa,
- To bring requisite technical expertise for the Department to ensure a clear, accurate and legally compliant Request for Proposals and procurement process for the Programme.

Overview

The service provider conducted a Pre-Procurement Readiness Assessment, which included the following:

- Reviewing the ***Procurement Strategy*** and preparing a compliance report.
- Reviewing the ***Pre-Procurement Activities*** and preparing a compliance report.
- Reviewing the ***Request for Proposal*** ("RFP") and preparing a report on the review. Agreeing on the changes in the RFP and preparing a revised RFP.
- Discussion on ***legislation exemptions*** required and preparing the application for the exemptions.

15. Mahlako-A-Phahla Investments: Pre-Procurement Readiness Assessment (2/2)

Outputs of the Study

- *The Procurement Strategy*: Gaps in the strategy were identified and activities to be undertaken before the issuance of the RFP and post issuance activities
- *Pre-procurement Activities:* The report identified legislative requirements in place, the findings and observations in the activities undertaken by the Department in relation to each of the pre procurement activities
- *Draft Request for Proposals:* The Request for Proposals should be structured in a manner to ensure a prompt and seamless procurement process which complies with the Constitutional imperatives of fairness, equitability and transparency, competitiveness and cost effectiveness.
- *Legislative exemptions:* Legislative exemptions required identified and an urgent need for the development of the Economic Development policy.

Date of Completion: 31 August 2016.
Duration: 3 months
Financial costs: R 20 174 423.82

16. Central Lake Trading TA/ Empire Technology: Programme Management System (1/2)

Purpose:

The intended outcome of this service is to provide the Department with the ability to effectively and efficiently administer programme management and including procurement; project tracking; governance; compliance and information management for the Nuclear New Build Programme (NNBP). The System will also provide the Department with a secured environment for the NNBP information management.

Overview:

The system offers:

- e-Procurement & Invoice Tracking
- Annual Performance Plan Management
- File & Content Management
- Contract Management
- Business Intelligence & real-time reporting
- Support Services

16. Central Lake Trading TA/ Empire Technology: Programme Management System (2/2)

Date of Completion: 9 December 2017.
Duration : 2 years

Outputs of the Study/Service
Service is still in progress

Financial costs: R 171 000 000.00

Thank You