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ESKOM ENVIRONMENTAL IMPACT ASSESSMENT (EIA:12/12/20/944) FOR A PROPOSED NUCLEAR POWER STATION AND ASSOCIATED INFRASTRUCTURE: COMMENTS ON THE REVISED PLAN OF STUDY FOR EIA

Your correspondence to Ms. Bongi Shinga of Acer (Africa) entitled "*COMMENTS: REVISED PLAN OF STUDY FOR NUCLEAR 1, NUCLEAR 2, AND NUCLEAR 3*" refers.

Arcus GIBB acknowledges receipt of the above-mentioned letter. We thank you for your valuable comments and your participation in the Eskom Nuclear Power Station (NPS) Environmental Impact Assessment (EIA) process to date. Your questions concerning the Nuclear-1 EIA process have been noted.

Responses to your comments / questions are as follows:

Your comment (1)

The revised POS states that impacts of decommissioning can only be assessed once decommissioning takes place, yet earlier in the same paragraph the criteria for the specialists studies states that the specialists must, where they are not certain, make educated judgments. If the specialists are incapable of making such judgments, should specialist who ARE capable of making such judgments/assessments (regarding decommissioning) not be appointed also? How can such a very real and primary impact concern be excluded from an environmental impact study simply because its potential impact is long term? Is the point of doing an EIA not for this very reason (i.e. to avoid excessive negative impacts)?

The Revised PoS states that the specialists have indicated that the impacts associated with decommissioning are too far into the future and therefore cannot be assessed at present. Is this very statement (by specialists) not sufficient proof of just what a long-term impact these plants will have on our environment?

Response (1)

Your comment is noted. The potential impacts of the decommissioning phase will be assessed as far that is practically possible, given the present available knowledge of future technology, methodology etc. trends and expected legislation. The impacts and the management thereof will be determined by the selected decommissioning strategy coupled with technological and legislative advancements. Arcus GIBB will provide guidelines, principles and criteria based on international literature, specialist input and best practice. The EMP will also contain specific 'in principle' commitments which will ensure responsible decommissioning.



Further, the EIR will also elaborate on the NNR's role and requirements on decommissioning, and address the long term impacts and the long-term sterilisation of land, as requested by DEAT in their letter dated 19 November 2008.

Your comment (2)

It goes on to say that the impacts and the management thereof (decommissioning) will be determined by the selected decommissioning strategy coupled with technological and legislative advancement. If the EIA is specifically not going to cover decommissioning then is the aforementioned statement backed up by any substantiated "decommissioning strategy" or technological and legislative advancement" or are we simply meant to hope for such technological, legislative and decommissioning strategies to take place in future? If this is the case, should the plan of study not also include the impact of possible poor, negligent and/or corrupt governance should South Africa's future leader(s) go down the wrong path? Such an occurrence could quite easily lead to no such advancements (in technology / legislation) taking place. This is not a very far fetched possibility and should be taken into consideration as a precaution, if this study elects to make such a bold statement as to base reliance on future developments/decision-making as a(n) [unqualified] mitigating measure.

Response (2)

Arcus GIBB is unable to predict exactly what legislative changes or technological advancements will take place in the next 60 years. However, as indicated in Response (1), the EIA will provide guidelines, principles and criteria based on international literature and best practice. The EMP will also contain specific 'in principle' commitments which will ensure responsible decommissioning.

Your comment (3)

The POS states that the specialists must recommend practicable mitigation actions that can measurably affect the significance rating and that they must recommend appropriate monitoring / auditing programs to check efficacy of mitigation objectives. How is it possible for them to recommend practicable mitigation actions and to recommend appropriate monitoring / auditing program(s) for the issues that cause most concern for the public (decommissioning, which is not covered in the study and health impacts which are also not covered in the study)?

Response (3)

As indicated in Response (1), the EIA will provide guidelines, principles and criteria based on international literature and best practice. The EMP will also contain specific 'in principle' commitments which will ensure responsible decommissioning.

The Terms of Reference for the Human Health Risk Assessment Specialist Study as outlined in the Revised Plan of Study for EIA specifically require the specialist to "*explain the impacts on human health*". Human Health Risk will be discussed as part of the EIA process. The results of which will be peer reviewed, by an independent specialist.

However in terms of the agreement between the NNR and the Department of Environmental Affairs (DEA), DEA will not make any pronouncements regarding radiological issues. All issues relating to radiological safety must be addressed through the NNR licensing process.



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Your comment (4)

The Revised PoS states that design based accident scenarios will be established in consultation with Eskom (in consultation with potential vendors) and the NNR requirements. Is this not supposed to be an independent study? How can Eskom (and its vendors) be one of the specialists providing consultation?

Response (4)

Eskom (in consultation with potential vendors) and the NNR requirements will be consulted for their expertise and advice in the area of potential radionuclide emissions during malfunction or accident, to determine probable time frames and significance of risk, as this is one of their areas of specialty. This by no means affects Arcus GIBB's role as independent environmental practitioners. If necessary an independent nuclear specialist will review the EIRs.

Your comment (5)

The Revised PoS makes reference to assessment of impacts of proposed desalination plants which will be part of the infrastructure of the nuclear power plants. If the desalination plants are going to be required for the operation of the plants, will this study be viewing the combined impacts of the simultaneous operation of both the nuclear power plant(s) and desalination plant(s)? Or are the specialists only going to assess each one of the plants independently. It has been proven with mining that when EIAs are done independently and incrementally that major impacts can be overlooked. It should be a requirement of this study that all factors should be accounted for simultaneously. Why is this risk not mentioned in the study?

Response (5)

The assessment of impacts will take into account the operation of the plant and all associated on site infrastructure including the desalination plant , which will then assist in determining the overall potential impact at each site. Potential cumulative impacts will also be assessed.

Your comment (6)

The Revised PoS states in a footnote that DEAT will not make a decision on nuclear safety, radiology, and radiation as these aspects are better placed within the regulatory process of the NNRA, and that to consider the same process in the EIA will be a duplication. If this is true, then the public should have a copy of what the NNR has found annexed to this EIA. This is again a primary concern for the public, yet, it is completely omitted from the study.

Response (6)



The NNR process which will involve public participation will only be initiated once the vendor and associated technology has been selected. The public will have an opportunity to engage with the NNR through their public participation process.

Your comment (7)

Again, another major concern for the public is evacuation times and emergency planning zones and the Revised PoS states that it will be Eskom who will determine these and that it will form part of the NNR process. Firstly, my same question, if this is an independent study, why is Eskom a consultant? Secondly, if this important aspect is being left to the "NNR" process, then the NNR's findings/ assessments of this issue should be annexed to the EIA.

Response (7)

Eskom is not the consultant, Eskom is the applicant and the operator of the plant and therefore is required to carry out certain activities. These activities are regulated by relevant authorities. The evacuation times and emergency planning zones are part of the safety studies that will be evaluated by the National Nuclear Regulator (NNR). These safety studies, and the NNR's evaluation, can only take place once the actual nuclear power station design has been chosen. The designs that Eskom would consider are modern designs with the latest safety requirements and features. These are designs that will have been licensed elsewhere in the world. Eskom will not construct and operate at any of the sites a nuclear power station whose design and safety does not meet the internationally recognised standards. Similarly, the NNR will not grant a nuclear installation licence if it is not satisfied that the safety standards will be met.

See Response (4) and (6) above.

Your comment (8)

The Revised PoS states that one of the benefits that the nuclear power plants will bring is that they have significantly lower greenhouse gas emissions when compared to that of coal fired power stations. Firstly, this will be construed by many as "greenwashing" as not the entire life cycling (including mining, decommissioning, transporting of fuels, construction of cement enclosures for the reactors, etc) is taken into consideration when this was determined by the nuclear industry). Just as with the coal power industry, mining, transportation, etc is accounted for when calculating greenhouse gas emissions, so should it be with nuclear's uranium mining, transportation, building large cement enclosures for reactors, building desalination plants, etc. Also, why is nuclear only being compared to coal (worst polluter) and described as a 'pro' and not similarly compared to renewables (least polluting), and described as a 'con'?

Response (8)

Dones et al, 2003: Comparison and overview highlights that over the full life cycle – from mining of the uranium, iron ore and other minerals, manufacture of the components and construction of the power station, operation and maintenance of the power station through to decommissioning of the station and the management and disposal of waste – nuclear power emits less than 11 grams of carbon equivalent per kilowatthour (gC /kWh) (ref: Greenhouse gas emissions from energy systems:. This is the same order of magnitude as wind and solar power including construction and component manufacturing, and two orders of magnitude below (i.e. one hundredth of) the average for coal, oil, and natural gas."

There are a number of issues that need to be taken care of when looking at the options for electricity generation; these include cost, lead time for construction, environmental impact, and operating characteristics relative to peaking and base load power generation. The planning for the construction of new power stations must also consider the different types of power stations that are required and their cost (which impacts on the price of electricity), the time taken to construct them, the environmental considerations



and their operating characteristics. The total demand for electricity in South Africa is not constant; rather it varies on a 24-hour basis, with peak demand in the early morning and in the late afternoon / early evening. To optimally meet the total demand, it is thus necessary to have both “base load” electricity generating power stations designed specifically to generate electricity continuously at all hours, as well as “peaking” electricity generating power stations designed specifically to generate electricity only during the periods of peak demand. This is achieved by harnessing different energy sources and applying different technologies.

Chapter 8 of the Final Scoping Report for the Nuclear-1 EIA discusses alternative forms of power generation. Eskom is in the process of exploring a number of different ways in which to generate electricity and is investing in further development of renewable technologies.

Your comment (9)

The Revised PoS contains one short article on "Alternatives Assessed" and dismisses renewable in one single sentence. It also goes on to say that coal is not a viable option for coastal areas. It also states that renewables are not far enough advanced to provide large-scale power generation facilities that can supply reliable base load power and that can be easily integrated into the existing power network in SA. Firstly, renewables cannot be compared to large-scale power generation facilities. Implementing renewables will require a whole new decentralised approach to power production involving a combination of renewable energy solutions. Technology is in place for this already and wind and solar mapping studies have been done in SA and so have other studies on the production of hydro-power and biogas from waste, etc. Where information is lacking in South Africa, information can be drawn from other countries, which have these systems in place already. Why are there no specialists appointed in this study to cover possible alternatives? This does not seem subjective. Secondly, the POS states that renewables cannot be easily integrated. How can such broad unsubstantiated statements be made in the plan of study? Yes, we are aware that there is actually going to be no 'easy' solution to resolving our power crisis. Are we simply looking at which option is "easier", or are we looking at which option is more economically, environmentally and socially sustainable?

Response (9)

Your comment is noted. Please refer to Response (8) above. Alternative generation types (including renewables) are discussed in the Scoping Report. This EIA is for a proposed nuclear power station. The strategic debate regarding alternative generation types has taken place with policy formulation.

Your comment (10)

Lastly, the means by which the public is made aware of this study and report is insufficient and discriminatory. South Africa's special circumstances (in light of the history of apartheid rule) has resulted in an entirely different social dynamic in South Africa. A large part of the population is illiterate and not able to read newspapers. Many cannot even afford to buy newspapers. Also due to the injustices of the past, a large part of our population will not comprehend the meaning behind all of this. This process is discriminating against such people. Some form of independent unbiased program should be established (workshops) in poor affected communities to provide them with easy to understand factual information (in their own language) to assist them in developing their own opinions, which will allow them the opportunity to comment during the comment period. Such a system should have been in place well in advance of the actual notices for comment going into papers.

Response (10)

Your comment is noted. The Public Participation Process conforms to the requirements in terms of the National Environmental Management Act, 1998, (Act No. 107 of 1998), and has made specific provision for illiterate I&APs, where possible. Individual and group meetings have been held with illiterate I&APs within locally affected communities. Local indigenous languages have been used in these meetings.



Your comment (11)

I have not touched on the socio-economic aspect of this study, but trust that a lengthy specialist report will be included in the study taking into consideration all recent economic events (nationally and globally), the financial woes Eskom is facing, the need for jobs in South Africa, and the skills shortage in the nuclear industry?

Response (11)

Your comment is noted and will be passed on to the Economic and Social Specialists. Please also refer to "4.5.14 Social" in the Revised Plan of Study for EIA, which details the Terms of Reference for the Social Specialist Study. Similarly, section "4.5.13 Economic" details the Terms of Reference for the Economic Specialist Study.

Your comment (12)

I also have not touched on the very real remaining concern of how there is still no viable plan for the long term storage of high level radioactive waste and how this will be addressed in South Africa. I presume this will be covered, at length, in the EIR? Why is it not mentioned in the Plan of Study?

Response (12)

Your comment is noted. The Nuclear Energy Act (Act No. 46 of 1999) and the National Radioactive Waste Management Policy and Strategy obligates the DME with the function of radioactive waste disposal, which in terms of NEMA must be discharged in cooperation with other government bodies and agencies. At present, no permanent repository has been established in the country. However, the presence of specific policy or repository facilities is not a prerequisite for the establishment of a NPS or any other nuclear facility.

Until such a facility is established by the DME, the high level radioactive waste will be contained within a disposal facility inside the plant building designed to accommodate the full complement of spent fuel of its full life cycle.

According to the National Radioactive Waste Disposal Institute Act 2008 (Act No. 53 of 2008):

25. (1) The generators of radioactive waste are responsible for technical, financial and administrative management of such waste within the national regulatory framework at their premises and when such waste is transported to an authorized waste disposal facility.

(2) The generators of radioactive waste must –

- (a) develop and implement site-specific waste management plans based on national policy;*
- (b) provide all relevant information on radioactive waste as required by the chief executive officer;*
- (c) demonstrate compliance with any conditions of a radioactive waste disposal certificate;*
- (d) provide site access to staff of the Institute for inspection against any conditions of the radioactive waste disposal certificate.*

(3) The generators of radioactive waste remain responsible for all liabilities in connection with such radioactive waste under their control until such time as the radioactive waste has been received and accepted in writing by the Institute, following an inspection, at which time liability shall pass to the Institute.

In terms of the above it is clear that the financial and human resources shall be made available and therefore, the institutional capacity and capability shall be in place in order to deal with and manage radiological waste generated by the proposed NPS.



With respect to the various streams of radioactive waste, it must be noted that handling of radioactive waste falls under the jurisdiction of the Minister of Energy in terms of the Nuclear Energy Act, and is also subject to a licensing process from the NNR. In light of this, the EIR will include a discussion on the management and disposal of radioactive waste, as well as the amount of waste (both radioactive and non-radioactive) that will be expected from the proposed NPS. Such discussions will be undertaken in the light of the then DEAT's (now DEA) approval of the Final Scoping Report (letter date 19 November 2009).

For further information on Radioactive Waste, please refer to Chapter 4, Section 4.8 of the Final Scoping Report.

Your comment (13)

I would like to end by saying that the proposed comment period for the draft EIR is insufficient and unfair and does not allow the public enough time to review / assess the report. This revised plan of study alone was 40 pages long. How can we get through the entire EIR in 60 days? In addition, the study relates to 3 different sites, each with its own unique environmental considerations. This period should be extended to a minimum of 120 days.

Response (13)

The timeframe of public review and comment on the Revised PoS for EIA was discussed with and agreed to by DEAT as 30 days. We acknowledge your request for an extension to the Comment Period for review of the Draft Environmental Impact Reports. Arcus GIBB will ensure that the Comments Period is reasonable and fair in light of the material to be reviewed by the public. The decision to extend the Comment Period, from that recommended by DEAT for complex EIAs, will be decided once the Report has been compiled.

In conclusion, the project team would like to assure you that Interested and Affected Parties comments are important to us and that your continued involvement in this process as an I&AP is valued. Your comments/questions will be captured in the Draft EIR that will be placed in the public domain for comment.

Please do not hesitate to contact us at any stage should you require any additional information regarding this proposed project.

We thank you for providing us the opportunity to respond to these questions and look forward to your ongoing involvement in the project.

Yours sincerely
For and on behalf of Arcus GIBB (Pty) Ltd

Jaana-Maria Ball
EIA Project Manager