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Attention: Mr P Dowling and Mr A Gubb

Dear Messrs Dowling and Gubb

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

Arcus GIBB (GIBB) acknowledges receipt of the submission from Wildlife and Environment Society of South Africa (WESSA) discussing the above report. We thank you for your valuable comments and your participation in the Eskom Nuclear Power Station Environmental Impact Assessment (EIA) process to date. Your questions and comments concerning the Nuclear-1 have been noted.

YOUR COMMENT (1)

The Wildlife and Environment Society of South Africa (WESSA) appreciates the opportunity to comment on the Nuclear 1 DEIR. Many of the issues raised by us during the scoping phase still apply and therefore we resubmit our letter of 1 April 2008 as an addendum to this submission appended below.

Any project of such national significance and cost (conservatively estimated at some quarter of a trillion rand) to the public fiscus, warrants not only a thorough Environmental Impact Assessment through the impressive number of specialist reports such as in evidence here, but also an innovative and embracing public participation programme that goes far beyond the usual. In our view this has not happened and the vast majority of South Africans are "in the dark" about choices dealing with the country's electricity provisioning plans for the long term and the implications of these choices. This is not as it should be and any implication that the consultation of interested and affected parties (I&APs) and capacity building exercises towards meaningful engagement between people and subject can be limited to the three local areas around the proposed sites, is rejected even if the commentary period has been more than three months.

RESPONSE (1)

The Environmental Impact Assessment covers the economic, social and environmental aspects related to this project. In terms of policy, legislation and regulations the EIA focus is not intended to fulfil the purpose of the Integrated Resource Planning process, which considers the country's

electricity provision and long term implications of the choices made, as well as the implications of not making choices. The Department of Energy is carrying out the IRP process. A Draft Report was made available for public comment during October 2010 (available at <http://www.doe-irp.co.za/>). Please refer to Chapter 6 of the Draft and Revised Draft EIRs for further information on this process. In terms of the EIA process for Nuclear-1, the focus of participation has been in the three potentially affected areas, but national advertisements have been placed with the intention of including a broader audience. Further, due to the public interest in this project it is often discussed in National and Provincial media.

Lastly, consultation during the Scoping and EIA phases were conducted in terms of best practice methodologies and the guidelines as prescribed by the DEA. The consultation process included:

- Focus Group Meetings;
- Key Stakeholder Workshops; and
- Public Meetings.

Public meetings were specifically arranged during the EIA phase to afford I&APs the opportunity to engage directly with the GIBB and ACER teams as well as the Eskom technical and engineering team. A list of all public meetings conducted is documented in the Draft EIR. These meetings were arranged in terms of best practise principles by scheduling the meetings as close as possible to affected communities and during times when most of the community members could attend. Meetings were advertised in national, regional and local newspapers and all I&APs that wanted to were free to attend any meeting that they wished to. The EIA Public Participation Process has also been reviewed by independent reviewers who have found the process to be adequate in terms of the legal requirements. The peer review report is included as an appendix in the Revised Draft EIR.

YOUR COMMENT (2)

The report itself, despite volume and extent has shortcomings raised by several groups. WESSA endorses many of these comments, but would like to emphasize the following:

1. Fresh water - The upstream pressure to supply 8 000 MI per day for Nuclear 1 and related infrastructure is not properly assessed in terms of impact considering the severe water constraints near all the proposed sites. The fact that such a power station would be regarded as strategic and therefore a priority water recipient is highly problematic and could see both ecological and social reserves being compromised.

RESPONSE (2)

Your comment is noted. Freshwater supply to the plant is recommended to be via a desalination plant, as none of the three sites investigated has sufficient supplies of fresh water. The desalination plant will be one of the first items of infrastructure to be constructed during the construction phase, should the proposed development be authorised. Prior to this, water will be obtained from municipal sources and brought onto site for construction purposes. This is likely to be for the first few months of construction.

All the specialists have assessed the various alternatives of water sources, including the construction of a desalination plant and this was identified as having the least negative potential environmental impacts.

With regards to water use, nuclear power stations with sea cooling use very small quantities of fresh water when compared with other technologies. The desalination plant addresses the local lack of water. Nationally the increase of nuclear technology will significantly reduce the total use of water for electricity generation. Currently 2-3% of water use in South Africa is allocated to electricity generation.

YOUR COMMENT (3)

2. Desalination of sea water to supply a NPS – this is repeatedly cited as the preferred fresh water supply option. However the volumes required would mean considerable localized hyper-salination and a significant draw on energy supply from the plant.

RESPONSE (3)

The envisaged desalination plant will comprise three units, each capable of producing 3 000 m³ of desalinated water per day. The intake water for the construction phase will be drawn from the beach wells and for the operational phase from the intake tunnels from the sea (and / or from the condenser, to improve the efficiency). The intake of sea water for the desalination process will be at maximum rate of 22 5000 m³/day, which amounts to 0.34 % of the total volume of water derived from the ocean via the cooling water intake tunnels.

Assuming a 40 % recovery of freshwater, 260 l/s of sea water will be required as input to the desalination plant, while 156 l/s of brine will be generated. The desalinated water will be stored either in a storage reservoir or a lined pond. During construction, the brine (hypersaline effluent) will initially be disposed into the surf zone to aid quick mixing and dissipation. During construction, the brine will be disposed into the sea via the cooling water discharge system, to assure instant dilution and disruption of the brine. The salt concentration of the seawater is 35 000 parts per million (ppm), while the brine that is produced is expected to have a salt concentration of 59 000 ppm. The brine and the effluents of reverse washings in the water will be directed to a collection sump. The mixture of water and chemicals will be pumped to a neutralisation pit, which will dilute the salt and chemicals. Since the brine is heavier than seawater it will flow out of the pipe along the bottom of the sea floor. The wave action will mix the brine into the water column. During the operational phase it is recommended that the brine water be mixed with the cooling water discharge so that it will be discharged at a diluted state and that it be released through a tunnel together with heated water.

The impact of desalination has been assessed in the Marine Impact Assessment which is attached as Appendix E15 to the Draft Environmental Impact Report (Draft EIR). The marine assessment found that as brine will be diluted to very low levels prior to release, no impact on the marine environment is predicted during this phase of the development.

YOUR COMMENT (4)

3. Wetlands - The specialist reports are clear in highlighting the obvious wetland impacts that would be experienced at Thyspunt and Bantamsklip. In our view these impacts are unacceptable in terms of loss of:
 - a. Natural (in some cases “unique”) systems affecting plant and animal habitat in relatively undisturbed parts of the coast
 - b. water storage, flood mitigation and sea-level rise buffering
 - c. wilderness experience and access to the coast

The aquifers in close proximity to the Koeberg site are of strategic metropolitan significance and could easily be compromised during plant construction or if used for abstraction.

RESPONSE (4)

Your comments are noted. The wetland assessment attached as Appendix E12 to the Draft EIR recognises the significant potential negative environmental impact that the proposed Nuclear Power Station on particularly the Bantamsklip and Thyspunt sites and proposes a number of mitigation measures. There is no intention to abstract water underground, or from surface water features at the Duynfontein site. The water quality in the groundwater resources at this site was found to be of too poor quality to supply the nuclear power station. This resource was used to supply Koeberg in the past, but Koeberg is now reliant on municipal supply for fresh water.

The wetlands report notes that the “no development option” is also associated with a strong likelihood of impact to the wetlands on and off the site. Existing developments, including small holiday houses within the Eskom site, as well as those adjacent to the site to the east, have all resulted in some level of degradation to the wetlands in their vicinity. Activities associated with degradation include abstraction (including the creation of weirs and reservoirs in wetland areas), the spread of alien plant material into wetlands, *ad hoc* construction of roads / causeways across wetland flow pathways; the construction of fences across wetlands and dune areas; *ad hoc* passage of vehicles through dunes; uncontrolled trampling and grazing of cattle through wetlands. In the wetlands to the east of the Thyspunt site, existing (approved and partially implemented) development rights will permit further fragmentation of the eastern valley bottom system. The expansion of other cluster-type development along the area to the east of the site, between the Oyster Bay dunefield and the Thysbaai dunefield is likely, and would contribute to piecemeal fragmentation and degradation of the system as a whole.

With respect to access to the coast: the intention is to allow controlled public access to the beach at all the sites. As is the case at Koeberg Nature Reserve, the public will have access to the sites. The beach will not be fenced off, but access will be controlled and security will be present.

YOUR COMMENT (5)

4. Seismology – Unfortunately an installation of the scale being considered would, in the unlikely event, of a major earthquake become a major public liability with regional if not international implications. The fact that records are not clear about the history of such events over the last 200 years should invoke the precautionary principle until such time as data is verified.

RESPONSE (5)

All recorded seismic events, including known seismic events from the pre-instrumental, but historical era (from 1620 to present) were incorporated into the Probabilistic Seismic Hazard Analysis for the three sites. Additional geological investigations were undertaken to identify potentially seismogenic geological features and determine the activity levels of such structures in the recent geological past (several thousand years).

YOUR COMMENT (6)

5. Life cycle economics – Any proposal that involves the expenditure of so much public money should be subjected to a full life-cycle cost analysis including:

- a. Fuel supply acquisition
- b. Transport of fuel
- c. Plant Maintenance
- d. Waste disposal site provision
- e. Insurance
- f. Amortization costs
- g. Additional infrastructure
- h. Staffing
- i. Housing
- j. Decommissioning

RESPONSE (6)

Your comments are noted. Please find comments from the economic specialist below:

The focus of the study was not to evaluate the mentioned issues. This study was part of an Environmental Assessment (EIA) process, assessing impacts at each site and identifying fatal flaws that could eliminate any of the three sites, as well as providing a comparison of the relative economic costs and benefits of the three sites. The focus of the study was not to determine whether a nuclear power station is desirable, from an economic point of view. Decision-making on the desirability of nuclear power as a generation alternative is made in the Integrated Resource Plan process.,

Where any of the issues mentioned differed from site to site they were incorporated in the Cost Effectiveness Analysis (CEA) and Macro-Economic Impact Analysis.

YOUR COMMENT (7)

6. Resource economics – While the value of reliable energy supply is acknowledged it is difficult to understand why the report did not go more deeply into the matter of the value in rands and cents terms of the proposed site areas and the regional biophysical contexts that would be impacted by the building of such a large facility and attendant road, power line and waste storage infrastructure. In our view at least the following should have been assessed:
 - a. Marine coastal resources of fisheries, tourism, storm buffering and aesthetics; and
 - b. Terrestrial resources of wetlands and pristine natural areas as water catchments, biodiversity repositories, air cleaners, tourism generators

RESPONSE (7)

Your comments are noted. The economic study assessed the three alternative sites during the EIA phase. The platform size would be the same at all three alternative sites and therefore no significant differences could be expected. Moreover, at the integration meetings no specialist dealing with biophysical matters mentioned that there was any fatal flaw which would require amending the presentation made by the economics specialists at those meetings. Thus, biophysical contexts were not costed. The potential economic impacts on fisheries and tourism, however, were taken into account in the analysis and are reflected in the Economic Impact Assessment.

YOUR COMMENT (8)

7. Marine coastal integrity – the seawater intake and outlet pipes being considered deserve more thorough evaluation. The extreme coastal weather conditions experienced periodically off all the three sites being evaluated demand that any proposed offshore infrastructure be thoroughly assessed not only for operational durability but as potential hazards and economic risk in the event of break-up or damage in storms.

RESPONSE (8)

The off-shore intake system will undergo a thorough design process (from concept to detail). As stated in the Marine Impact Assessment in order to fulfil the need for cooling water for the condensers and auxiliary systems of the proposed power station, seawater will be utilised. A tunnel system is being considered at this site. As part of such a system two intake pipes will be tunnelled from a land-based cooling water reservoir out to sea. At water depth of roughly 25 m the pipes will emerge from the seafloor and water will be taken in via intake structures. Although some disruption to the benthic environment will occur during the construction of this intake system, a much smaller area will be affected than for the construction of an intake basin, resulting in significantly less disruption than that associated with the construction of the Koeberg Nuclear Power Station. The proposed outflow system consists of three to four outflow pipes which are laid beneath the sea floor with cooling water being released offshore. In order to lay the outflow pipes, a temporary dam extending just over 400 m out from the intertidal zone will be build during the construction phase. Following the laying of the pipes, the walls will be collapsed, burying the pipes, except for the release point. Regardless of the outflow system chosen, the effects on the sub tidal benthic habitat due to the construction process will be the same. Impacts will be confined to the immediate area, with organisms being lost due to the physical disturbance of the sediment and smothering. This effect will, however, be of short duration.

YOUR COMMENT (9)

8. Safety, risk and disaster – Apart from the matter of radioactivity, which has strangely been excluded from the terms of reference of this investigation, there are several other areas of concern:
 - a. Climate change induced storm surges could bring the electricity generating plant, its circuitry, nuclear fuels and waste into close contact with seawater, in ways not previously experienced or recorded. The report recommends platforms being built about 15 m above mean sea level, indicating that the concern has been considered, but not in enough depth in our opinion.
 - b. Point (a) could be extended to groundwater contamination via similar processes as climate change impacts on the hydrology of coastal aquifers which have several user groups. Such power stations cannot be easily moved once installed and consequences could be inter-generational in nature.
 - c. There is no consideration given to the likelihood of human error events such as the one which put Koeberg out of operation for several months, happening with a new installation, or of natural phenomena like algal blooms and jelly fish population explosions threatening operations of such a plant.
 - d. Low levels of public engagement and risk awareness as currently obtain imply equally low levels of preparedness for dealing with risk. This is not apparent only amongst citizens but holds true for local authorities as well. The report has little in regard to assessment of this social factor.

RESPONSE (9)

Your comments are noted.

a. The effect of climate change has been assessed and described in a report evaluating the position of the 1:100 year sea flood line. This assessment is attached as Appendix E9 to the Draft EIR and took into account:

- Tides;
- Storm surge;
- Wave run-up;
- Climate change including sea level rise, increased winds and increased waves;
- Long-term erosion due to climate change and measured erosion rates (where available); and
- Storm erosion.

b. Your comments are noted.

c. Your comments are noted. The Human Health Risk assessment attached as Appendix E24 of the Draft EIR assessed the following:

The HHRA in the **Site Safety Report process** covered normal operation, anticipated operational occurrences and design basis accidents. *Anticipated operational occurrences (AOOs)* refer to operational processes that deviate from normal operation but which, in view of appropriate design provisions, would not cause any significant damage to items important to safety and would not escalate to accident conditions.

Design-basis accidents are accident conditions against which a facility is designed according to established design criteria, and for which the damage to the fuel and the release of radioactive material are kept within authorised limits.

A quantitative assessment will be done for the Site Safety Report process as part of the NNR requirements. Doses due to these conditions must comply with the NNR dose limits and must be demonstrated to be As Low As Reasonably Achievable (ALARA).

d. Emergency response is addressed in the Emergency Response Report, attached as Appendix E26 of the Draft EIR. In this report, it is indicated that the Bantamsklip and Thyspunt sites will require substantial upgrading of infrastructure since they are in remote areas. It is acknowledged that capacity of some of the local authorities is low and cannot cope, even with current demands. Eskom will have to go enter negotiations with the local and other relevant authorities, prior to construction, to agree on the apportionment of responsibilities for the improvement of capacity, including institutional capacity.

YOUR COMMENT (10)

9. **No go option and alternatives** – Despite a robust and high level international debate around energy supply and demand management options, alternative technologies and climate change context this report does little in the way of summarizing this discourse to facilitate better final decision-making. The concept of the no-go option is summarily dismissed instead of providing a dispassionate assessment of the consequences.

RESPONSE (10)

This impact assessment is not intended to assess potential energy supply alternatives, including the options of renewable supply and other non-renewable alternatives. As indicated in the EIR, the demand for new generation to replace existing generation capacity, as well as to cater for the expected increase in demand, necessitates that as much as 40 000 MW of new capacity will be required by 2025. In order to meet this requirement, an appropriate mix of renewable and non-renewable generation technology, as well as a mixture of base load and non-base load generation needs to be pursued in parallel. It has been clearly stated in the EIR, as well as by Eskom, that nuclear power is not regarded in isolation or as an alternative to wind or solar power, and that several renewable alternatives, including solar power and wind power, are currently being developed. The relative contributions between these technologies in South Africa's energy mix will be determined by the Integrated Resource Planning process, a draft Integrated Resource Plan was published by the Department of Energy in November 2010 and is available for public comment.

YOUR COMMENT (11)

10. Bias – while some of the specialist reports aim for objective evaluation of on the ground status, the general thrust of the report appears to be weighted in favour of the proposal for one or more coastal nuclear power stations. What would be expected is a clear non-partisan statement of investigation results.


RESPONSE (11)

Your comments are noted. The sites evaluated in the EIA were all coastal sites obtained from a ten-year, independent, Nuclear Site Investigation Programme (NSIP). A coastal location for the sites is based on the water-stressed nature of South Africa. Water sources in the interior, especially in the Mpumalanga Highveld, where the majority of South Africa's coal fired generation is situated, are already severely stressed. In view of the vast volumes of water required for cooling of a nuclear power station, it may not be feasible to build a nuclear power station inland in South Africa however inland options will be included in the next site identification process.

We thank you for providing us the opportunity to respond to these comments. Please do not hesitate to contact us should you require any additional information regarding this proposed project.

Should you have any queries with respect to the above please do not hesitate to contact Arcus GIBB.

Yours faithfully
For Arcus GIBB (Pty) Ltd



Jaana-Maria Ball
Nuclear-1 EIA Manager

Addendum (submitted during the Scoping Phase and responded to in the Scoping Report)

**WILDLIFE AND ENVIRONMENT SOCIETY OF SOUTH AFRICA
(WESSA) comment on:**

**ESKOM'S NUCLEAR POWER STATION AND ASSOCIATED
INFRASTRUCTURE
ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
DRAFT SCOPING REPORT (DSR)**

1 INTRODUCTION

WESSA notes that Eskom's application to build a nuclear power station (NPS) is made within the context of South Africa's energy supply problems, national rolling blackouts and an increasing body of evidence that supports the need to reduce global carbon dioxide emissions substantially and quickly.

In addition, WESSA understands that the terms of reference of the current study do not include a consideration of whether or not a nuclear power station should be built. The terms of reference have been narrowed down to focus on choosing one of five proposed sites as the best alternative for the construction of the first of five nuclear power stations. WESSA believes that South Africa's energy policy read in combination with South Africa's Constitution necessitate a broad public participation process prior to a decision being made to construct a nuclear power station. In this respect, the narrowness of the current process has, in WESSA's opinion, rendered it seriously flawed.

In addition, the current study is based on the assumption that the construction of bulk energy supply plants is the only feasible alternative to meeting the country's energy needs in the short to medium term. Furthermore, the assumption is made that such bulk energy will be supplied via the construction of five nuclear power stations and three or four coal-fired power stations. South Africa's Energy Policy gives the undertaking that bulk supply facilities will be compared with all feasible alternatives and that such consideration will encourage a shift to more sustainable and environmentally benign energy supply technologies. There is no evidence that these requirements of the Energy Policy have been met and there are no substantive arguments to justify the narrowing of terms of reference of the current study to the consideration of site alternatives for a nuclear power station only, which, as mentioned above, is intended to be the first of five such installations. WESSA contends, once again, that the failure to consider other energy supply alternatives (including renewable energy alternatives) on an equal footing, in all respects, with a nuclear power station, results in a flawed study.

WESSA places on record that its participation in this process does not imply support, in principle or otherwise, for Eskom's stated intentions regarding bulk energy supply in South Africa in the short to medium term, one of the first steps of which is the construction of a nuclear power station as envisaged in this study. WESSA is of the opinion that South Africans have not been afforded sufficient opportunity to engage in the debate of energy supply alternatives in order to make informed decisions and support the construction of the envisaged nuclear power station.

In its policy on nuclear power, WESSA notes that:

One of the key arguments that is used to promote the use of nuclear energy is that it generates less carbon dioxide than fossil fuel. WESSA recognises that there is an urgent need to reduce the

production of greenhouse gases. However, the implementation of alternative programmes which reduce greenhouse gases but result in other potential long-term environmental hazards needs to be avoided. There is growing recognition internationally of the potential for renewable energy sources to meet energy needs while achieving the objective of reducing greenhouse gas emissions, as well as reducing pollution and safety hazards. The potential risk of radiation and the safe disposal of nuclear waste have not been resolved, despite years of research. This includes the risks associated with transport of unused and spent fuel.

WESSA believes that all South Africans should be given the opportunity to engage fundamentally on the debate about future energy demand and supply in the country. The focus of proposed solutions should be on their sustainability, not merely on their short to medium term capacity to supply large amounts of energy. As a reaction to the current energy crisis, the South African government appears not be paying serious attention to our becoming a world leader in emergent technologies that harvest the wind, wave and solar energy which are so abundant in South Africa.

2 COMMENT ON THE SELECTION OF FIVE POTENTIAL SITES AND THE SUGGESTION THAT THE NUMBER OF SITES BE NARROWED TO THREE FOR THE REMAINDER OF THIS PROCESS

2.1

2.2 2.1 Site selection based on the NSIP

According to the DSR, Eskom “implemented their NSIP (Nuclear Site Investigation Programme) early in 1982, with the view to identifying and ranking sites of NPS in South Africa.” The DSR relies heavily on this investigation and the five sites proposed as alternatives come from the results of the NSIP. WESSA has no means of assessing whether or not these five sites are still the most appropriate according to the methodology applied in the now-outdated NSIP. WESSA records its concern that changes in settlement densities, patterns and human activity have not been factored into the current study. WESSA believes that a proposal such as the current one should have been based on a more contemporary analysis of potential suitable sites.

As an example that underscores questions about the validity of the NSIP some twenty years after it was initiated, WESSA notes the following with regard to the proposed Bantamsklip site:

- The close proximity (10km) of the proposed site to the towns of Pearly Beach and Buffelsjag, this being within the current 16km Urgent Protection Zone.
- The residential growth currently being experienced by Pearly Beach that was probably not factored into the 1982 NSIP.
- Coastal fynbos is hugely under threat in the Western Cape as a result of regional developmental pressures. The impact of siting of the NPS here could have significant impacts on the long-term protection of coastal fynbos.
- This area is developing into the Agulhas Wine Region, and will be of major importance to the wine industry of the Western Cape. WESSA understands that most NPS’s experience minute releases of radioactive gases from the pressure vessels and while these releases might be regarded by the International Atomic Agency as being insignificant, public perceptions relating to these releases may taint the commercial viability of this wine region?

Similar issues may be raised with regard to several other sites.

2.3

2.4 2.2 Potential climate-change impacts

WESSA recommends that the detailed environmental impact assessment factor in the predicted effects of global warming, such as sea level rise and the more frequent occurrence of extreme weather phenomena.

2.5 2.3 Possible exclusion of the Northern Cape sites

WESSA notes with concern that the DSR recommends that the two Northern Cape sites, Brazil and Schulpfontein, be excluded from further detailed investigation in the EIA process. WESSA does not support this position and strongly urges that all five sites continue to be considered in future phases of the process. WESSA does not believe that the DSR provides sufficiently compelling reasons or evidence with regard to the exclusion of the Northern Cape sites. An analysis of all preliminary specialist studies, on a comparison of site-for-site basis, shows clearly that no one site stands out more favourably than any other. Excluding the Northern Cape sites from further consideration on the basis of transmission line costs fails to consider the question of fresh water supply (see below), nor the possibility that those sites may be of less biological importance. Only after detailed specialist studies have been done on all five sites will it be possible to make an informed decision on site exclusion.

3 COMMENT ON POTENTIAL ENVIRONMENTAL IMPACTS

3.1 3.1 Reflection of the full environmental impacts of an NPS

WESSA holds that the cumulative (direct and indirect) impacts of establishing an NPS at any one of the proposed sites must be very carefully assessed, summated and compared. The construction and operation of an NPS will lead to significant development in the chosen region, including the expansion of residential and commercial settlements, the impact of transmission lines, fresh-water and other pipelines and increased service infrastructure. The cumulative impacts of one site might favour it above the others and should also be used in ranking the sites for decision-making purposes. Although the terms of reference of most of the specialist studies states that cumulative impacts must be considered, what is lacking is a synthetic approach to a wide array of cumulative impacts that cross various specialist fields. WESSA requests that this be included in the detailed environmental impact assessment.

The DSR fails to articulate or consider the environmental impacts associated with uranium mining, which include water and energy consumption and potential biodiversity impacts, as well as the cost and potential impacts associated with the decommissioning of uranium mines.

According to NEMA Regulation 29(1)d, the scoping report should also include a description of the manner in which the social economic environment may be affected. WESSA submits that the DSR is inadequate in this regard. The report does not include an analysis of the impact of the capital investment in the NPS on the price of electricity; the full costs of the NPS, including waste management and decommissioning; the economic impact that land use restrictions will have on the area; the potential economic impact of a nuclear accident, including the costs of insuring against such an accident, which WESSA understands will have to be borne by the government and, hence, the taxpayer.

WESSA considers the DSR to fall short of the NEMA requirement that all the general impacts associated with the construction, operation and decommissioning of an NPS have not been adequately reflected and will not be adequately catered for in the detailed EIA. Such shortcomings, unless rectified, will result in a flawed Environmental Impact Assessment report.

3.2 3.2 Separation of site selection EIA and transmission line EIA processes

WESSA believes that it compromises rigorous environmental impact assessment procedures to separate the assessments of the potential environmental impacts of transmission lines from the assessment of the potential environmental impacts of constructing an NPS. WESSA urges the proponent and the consultants to reconsider this position and to include the assessment of potential impacts of transmission lines in the current study. Specialist reports would have to be amended accordingly. As an example: it makes little sense to decide on the siting of a sewage works plant separately to deciding on the routing of the associated sewage pipeline. The City of Cape Town

attempted such an approach and eventually had to merge the two processes. The integration of the two processes resulted in a different outcome from that which had been anticipated by the separate processes.

3.3 3.3 Fresh water supply

The fresh water requirements of an NPS are substantial – 8 million litres per day or almost 3 billion litres in one year. (This figure excludes the additional water demand of the increased population as a consequence of the construction of the NPS, which is estimated to have a water demand of a further 2 million litres per day.) South Africa's average annual rainfall is some 460mm per year, against a global average of approximately 890mm per annum. South Africa is thus a water scarce country, The question of fresh water supply is of major concern to WESSA and it is recommended that this be given comprehensive and detailed consideration in further phases of the environmental impact assessment process.

Competition for South Africa's existing fresh water supplies is intense and is likely to intensify even further in the face of anticipated future economic growth and climate change. The preliminary specialist report on fresh water supplies indicates that it is not feasible to use existing ground water supplies. It is also unlikely that the major rivers in any of the areas will be able to meet all future water demands, including the ecological requirements of the river systems themselves, especially in view of the potential impacts of climate change.

The DSR suggests the possibility of using desalinated water. No mention is made of the fact that the greatest obstacle to obtaining fresh water via desalination is the energy requirements of the process. The detailed EIA must specify unambiguously the extent to which the energy requirements of desalination will negate the advantages of energy supply and the economic feasibility of the NPS.

3.4 3.4 Marine issues

WESSA is concerned that seawalls for inlet harbours may cut off long-shore sand movement. WESSA notes that in the preliminary specialist reports, an oceanographer was not included in the specialists approached and requests that this shortcoming be addressed in the detailed environmental impact assessment. In addition, the detailed environmental impact assessment should include the specialist marine study report on the long-term impacts of the warm-water plume at Koeberg and the significance of these impacts. Should desalination of seawater be required in order to meet fresh water demand, impacts of the release of brine into the sea needs to be investigated.

3.5 3.5 Waste

The waste generated by an NSP remains a highly contentious issue that has not been satisfactorily addressed in the DSR. It is proposed that the low to medium level waste is stored at the Vaalputs site in Namaqualand. The high level waste will be stored on site until such a time as South Africa has a facility for the disposal of high-level radioactive waste. According to the DSR, it would appear that the disposal of waste will not constitute a specialist study. WESSA believes this is a serious shortcoming that should be rectified. Essentially, by skirting around this issue, opportunity is provided for the continued construction of several NPS's without adequate provision being made for the storage and processing of high-level radioactive waste. Opportunity should be provided in the detailed Environmental Impact Assessment for detailed research and discussion of this matter. If the outcome of such a study concludes that the implementation of the national Radioactive Waste Management Policy and Strategy for South Africa must precede the construction of an NPS, then so be it. This, of course, implies that the necessary legislation must be enacted to enable policy implementation. Arguments based on the urgency of increased energy supply should not be used as an excuse for the government to continue to drag its heels on this matter and avoid the difficult questions it poses.

3.6 3.6 Specialist studies

From the DSR it is evident that the initial specialist studies of each of the sites are not adequate for the detailed environmental impact assessment and that further studies will have to be carried out. Care must be taken with the terms of reference of such specialist studies in order to ensure that the

concerns in the Scoping Report are adequately addressed; in particular all specialist studies should include an assessment of the potential of the impacts of climate change.

WESSA appreciates being given the opportunity to provide input into the terms of reference of the specialist studies. However, WESSA is of the opinion that these terms of reference should, in themselves, be reviewed by relevant specialists and respectfully requests that this be done.

3.6.1 3.6.1 Climatology:

The terms of reference of this specialist study must include the anticipated impacts of climate change, including increased temperatures, increasing frequency of extreme weather events, etc.

3.6.2

3.6.3 3.6.2 Geohydrology:

This specialist study should carefully examine the quality and quantity of groundwater reserves, in addition to any potential link between groundwater reserves. Recharge rates of groundwater reserves must be established, as must the potential impact of climate change on the recharge of these reserves.

3.6.4

3.6.5 3.6.3 Biological assessments – terrestrial and marine:

Detailed assessments and analyses must be undertaken at all sites, especially at the two Northern Cape sites, where current information is extremely sparse. Such analyses must include breeding and migratory patterns and possibly transient faunal species.

Specialist flora studies should include consideration of potential shift of species/habitats as a consequence of climate change. Sites should also be considered in terms of the potential for the conservation of vegetation types and the integration with the Succulent Karoo Ecosystem Programme (SKEP) and Cape Action for People and the Environment (C.A.P.E.).

3.6.6 3.6.4 Fresh water supply:

The freshwater demands of the proposed NPS have been highlighted as a critical issue elsewhere in this document. The terms of reference of these specialist studies must reflect this and must also include the impacts of climate change on freshwater supplies. The studies must also take into account the freshwater demands of the settlement or increased settlement associated with the construction of the NPS. If distant water supplies (rivers, dams or aquifers) are being considered, the impacts on distant sources (ecological, agricultural, residential and industrial) must be considered, as well as the full impacts of the water pipelines that will be required for water transportation and associated service roads must be considered. It is possible that some of these proposals may require the impacts to be transferred to other specialists for further study.

3.6.7

3.6.8 3.6.5 Oceanography:

It is recommended that climate change predictions be included in this specialist study. One of the predictions of climate change is the movement of ocean currents. The anticipated impact of such movement on the NPS should be assessed. WESSA suggests that an oceanographer be included in this specialist study group.

3.6.9

3.6.10 3.6.6 Social and economic:

The terms of reference of these specialist studies must ensure the inclusion of a full economic and social benefit and cost analysis of the NPS, not only on the local communities, but on the broader South African public. As mentioned elsewhere, the economic cost should include the cost of decommissioning the plant.

3.6.11 3.6.7 Heritage

It is not apparent whether or not the terms of reference of this specialist study include archaeological and palaeontological studies, in particular fossil records, which are known to

abound in the Northern Cape. WESSA believes that this specialist study will have to be conducted by an historian, an archaeologist and a palaeontologist.

3.6.12 3.6.8 Tourism:

The tourism studies should include all tourist-related activities in the wider area, including ecotourism (wild flower tourism industry on the West Coast). The effect of public perceptions on the siting of an NPS must be included in the assessment. Once again, this study must be conducted for the full life cycle of the plant, including the decommissioning phase.

3.6.13 3.6.9 Transport:

The current adequacy of the transport infrastructure must be assessed carefully. Additional transport infrastructure that is required must be factored into the cumulative impacts of the NPS. The terms of reference focus the transport studies on the site and the area immediately surrounding the site. Included in the transport study should be the transport of unused and spent nuclear fuel to and from the site.

4 ALTERNATIVES

The DSR gives some consideration of alternatives, defined in the NEMA EIA regulations as “different means of meeting the general purpose and requirements of the activity”. Although alternative forms of power generation are listed, both renewable and non-renewable, alternatives to meeting South Africa’s energy demands other than via bulk energy supply are not adequately considered. In particular, the new CIGS technology, which the DSR says may be available in South Africa in mid-2008 and which the DSR indicates is “theoretically easy to scale up to industrial output levels” must be more seriously considered in the detailed environmental impact assessment. WESSA believes that, given the current context of climate change, bulk energy supply paradigms need to be more rigorously challenged in environmental impact processes such as the current one.

5 COMMENT ON MATTERS OF PROCESS

In the context of an EIA process of such importance and complexity, WESSA rejects the notion that open days constitute sufficient opportunity for public participation. While open days do provide an opportunity for individuals to gain some knowledge and have some questions answered, such opportunities are usually only utilised by individuals who have the confidence to interact on a one-to-one basis and who already have a fairly good grasp of the issues identified in the environmental impact assessment process. Public meetings perform a different and equally important function and provide interested individuals with the opportunity to hear what others have to say. In addition, meetings or workshops with key stakeholders and specialists in attendance are considered to be very valuable. WESSA urges the public participation consultants not to compromise any aspect of the public participation process and to provide all three opportunities (as outlined above) for members of the public to engage with the process.

The draft EIR will be a complex and technical document, with at least 23 specialist studies, the draft report and its recommendations. Sufficient time must be allowed for members of the public to engage properly with this documentation. The proposed 54 days, although apparently generous, is a very tight deadline when the sheer quantity of information is borne in mind. Very few, if any, members of the public are in a position where they are sufficiently privileged so as to be able to give their undivided attention to this process for two months. WESSA respectfully requests that this time period be considerably lengthened.

WESSA requests that all relevant documents be made available to interested and affected parties in digital format (CD or DVD) and also downloadable from the internet. It is unrealistic to expect that anyone is able to study the documents with sufficient thoroughness if such documents are lodged in public libraries and civic centres. This restricts access largely to normal working hours, when interested and affected parties are engaged in their own work commitments.

6 CONCLUSION

WESSA acknowledges the extent to which staff and members from the Eastern Province and Northern Cape Regions have contributed to this comment.

WESSA further acknowledges the efforts made by the consultants, thus far, to conduct an independent and transparent public process. In particular, WESSA is grateful to Ms Bongji Shinga for her professional and competent assistance at all times. We thank the consultants for the opportunity to comment on this Draft Scoping Report and trust that our submission will serve to contribute to an environmental impact assessment process that meets the most rigorous of requirements in terms of South Africa's law.