

Our Ref: J27035

20 March 2011

Cullinan & Associates Incorporated
On behalf of the Thyspunt Alliance

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Attention: Mr Cormac Cullinan

Dear Mr Cullinan

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 acknowledges receipt of the submission received from Cullinan & Associates on behalf of Thyspunt Alliance and its members. We thank you for your valuable comments and your participation in the Eskom Nuclear Power Station (NPS) Environmental Impact Assessment (EIA) process.

Arcus GIBB would like to respond as follows to your comments:

YOUR COMMENTS (1 - 7)

INTRODUCTION

1. We represent the Thyspunt Alliance and its member organisations (“our clients”). The comments in this memorandum are submitted on behalf of the Thyspunt Alliance as a whole, and its members, each of which are interested and affected parties (“I&APs”) in this environmental impact assessment (“EIA”) process.
2. The members of the Thyspunt Alliance are:
 - 2.1. the St. Francis Residents Association;
 - 2.2. the Seavista Forum;
 - 2.3. the St. Francis Kromme Trust;
 - 2.4. the South African Squid Management Industry Association (SASMIA)
 - 2.5. the Friends of St Francis Nature Areas (“FOSTER”)
 - 2.6. the Port St Francis Harbour Association;
 - 2.7. the Gamtkwa Khoisan Council;
 - 2.8. the Cape St Francis Civic Association;
 - 2.9. the St Francis Conservancy;
 - 2.10. the Supertubes Foundation;
 - 2.11. For A Safe Tomorrow (“FAST”); and
 - 2.12. Ryszard and Tess Sterzelecki.

3. Eskom Holdings Limited (“Eskom”) has applied for an environmental authorisation to construct, operate and decommission a nuclear power station with a capacity of up to 4000 MW (“Nuclear-1”). For the reasons set out below, the Thyspunt Alliance and its members assert that the EIA process which is underway in relation to Nuclear-1 is premature and fatally flawed. The comments on the draft EIAR contained in this document are submitted without prejudice to that assertion and the participation of our clients in this EIA process should not be interpreted as endorsing or acknowledging the validity of that process. In our clients’ view this EIA process should be terminated until certain investigations and decisions have been made (these are discussed more fully in paragraphs 29 to 91.14 below).
4. Furthermore, our clients have not been provided with the information which they require to comment fully and adequately. This is due to information deficiencies in the draft environmental impact assessment report (“EIAR”) and as a consequence of the environmental impact practitioner (“EAP”) and Eskom failing to supply certain information requested by our clients (e.g. information regarding the process used to compare the alternative sites which resulted in the Thyspunt site being selected as the preferred alternative). Accordingly, our clients reserve their rights to submit further comments as additional information is received (including comments on how that information will affect the conclusions drawn from the information which appears in the draft EIAR).
5. The comments in this document must be read as supplementing those submitted by members of the Thyspunt Alliance in their own capacity. In most cases this document refers to, but does not repeat, the detailed comments submitted by members of the Thyspunt Alliance which are summarised in the *Executive Summary of the Thyspunt Alliance Response to the Nuclear-1 Draft EIAR* (“Thyspunt Response Executive Summary”) which is submitted with this memorandum. Some of the comments relate to the EIA process as a whole, whereas others focus on the evaluation of the Thyspunt site itself (which is of specific concern of our clients); the information relied upon; and methodology used by the environmental assessment practitioners (“EAPs”) to arrive at the conclusion that the Thyspunt site is the preferred alternative.
6. This memorandum also lists some of the further information and studies that should be conducted before the final EIAR is prepared. The missing or inadequate information is so extensive that it is immediately clear that once this information has been provided, interested and affected parties (“I&APs”) must be given a further opportunity to comment on this information before a final EIAR is prepared.
7. This memorandum sets out relevant aspects of the law applicable to the EIA process as a yardstick against which the Nuclear-1 EIA process and the contents of the draft EIAR may be assessed. It then explains why this EIA process is premature, before dealing specifically with the various deficiencies in the EIA process itself including flawed assumptions, process irregularities, flawed methodology, and non-compliance with the EIA Regulations.

RESPONSE (1 - 7)

- Your comments are noted. However, as you will see in the remainder of our response, our professional opinion is that more than sufficient information is available to carry out this EIA investigation and that it is, therefore, not premature. Detailed investigations have been undertaken as part of the EIA process to ensure that all relevant information required for decision making is available. Our reasoning for this conclusion are outlined in the responses below.

YOUR COMMENTS (8 - 17)

PURPOSE OF EIA PROCESS

8. The EIA process being conducted in relation to the proposed Nuclear-1 power plant must be understood within the context of the overarching national imperative to promote ecologically sustainable development.
9. Section 24 of the Constitution (Environment) provides that:
 - “24. Everyone has the right –
 - (a) to an environment that is not harmful to their health or well-being; and
 - (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation;
 - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable, economic and social development.” (emphasis added)
10. Section 39 of the Constitution deals with the interpretation of the Bill of Rights and provides that:
 - “39(1) When interpreting the Bill of Rights, a Court, tribunal or forum –
 - (a) must promote the values that underlie an open and democratic society based on human dignity, equality and freedom;
 - (b) must consider international law; and
 - (c) may consider foreign law.”
11. Consequently we agree with the submissions made by the Sustainable Energy and Climate Change Project (“SECCP”) dated 27 June 2010 to the effect that the foreign law may be used as guidance in determining what constitutes “reasonable legislative and other measures” in the context of an EIA for a nuclear reactor for the purposes of section 24 of the Constitution. (The submission by the SECCP contains information regarding the law applicable in the United States of America and specifically the guidance issued by the United States Environmental Protection Agency in relation to the assessment of severe accidents.)
12. The National Environmental Management Act 107 of 1998 (“NEMA”) is one of the legislative measures taken to implement section 24 of the Constitution. The preamble of NEMA provides that:
 - “the State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone”
 - “sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations”.
13. NEMA specifies national environmental management principles that apply to the actions of all organs of state that may significantly affect the environment.¹ In addition, these principles must apply alongside all other appropriate and relevant considerations, including the State’s responsibility to respect, protect, promote and fulfil the social and economic rights enshrined in Chapter 2 of the Constitution (the Bill of Rights).² NEMA also requires that its principles must serve as guidelines when any organ of state takes any decision in terms of the Act (or any other

¹ NEMA s2.

² NEMA, s2(1)(a).

statutory provision concerning the protection of the environment).³ Furthermore, the NEMA principles must guide the interpretation, administration and implementation of the Act itself as well as “any other law concerned with the protection or management of the environment”.⁴

14. Chapter 5 of NEMA is concerned with promoting the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities.⁵ The general objectives of integrated environmental management are specified in section 23(2) and one of the primary tools used to achieve this purpose is the requirement that certain listed activities or specified activities may not be undertaken unless they have been authorised in terms of an environmental authorisation. In this regard NEMA provides that:

“24(1) In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority charged by this Act with granting the relevant environmental authorisation.

15. NEMA requires that “development must be socially, environmentally and economically sustainable”⁶ and accordingly an EIA process must be undertaken in order to ensure that the competent authority authorised to decide whether or not to grant an environmental authorisation is in possession of all material facts. More specifically this means that the social, economic and environmental impacts of activities, including disadvantages and benefits, must be identified, investigated, assessed, reported and considered by the competent authority.

16. It is important to appreciate that by virtue of the wide definition of the term “environment” in section 1 of NEMA, the assessment of environmental impacts must include an assessment of the impacts on physical, chemical, aesthetic and cultural properties that influence human health and well-being, as well as impacts on the interrelationship between different aspects of the environment.⁷

17. Applicants for an environmental authorisation are required to comply with requirements prescribed in terms of NEMA⁸ and the minimum requirements for environmental impact assessment processes are stipulated in section 24⁹ which provides that:

“24(4) Procedures for the investigation, assessment and communication of the potential impact of activities must ensure, as a minimum, with respect to every application for an environmental authorisation-

- (a) investigation of the environment likely to be significantly affected by the proposed activity and alternatives thereto;
- (b) investigation of the potential impact of the activity and its alternatives on the environment and assessment of the significance of that potential impact;

³ NEMA s2(1)(c).

⁴ NEMA s2(1)(e).

⁵ NEMA section 23(1).

⁶ NEMA s2(3).

⁷ NEMA stipulates in section 1 that:

“**environment**’ means the surroundings within which human exist and that are made up of –

- (i) the land, water and atmosphere of the earth;
- (ii) micro-organisms, plant and animal life;
- (iii) any part or combination of (i) and (ii) and the inter-relationships among and between them; and
- (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being;”

⁸ Section 24(1A).

⁹ Since the commencement of the EIA process for Nuclear-1 section 24 of NEMA has been amended by the National Environmental Management Amendment Act 62 of 2008. However section 12(2) of that Act provides that applications for environmental authorisations that were pending when the amendments took effect must be dealt with as if the amendments had not been made. Accordingly the version of section 24(4) quoted above does not reflect the amendments made by Act 62 of 2008.

- (c) investigation of mitigation measures to keep adverse impacts to a minimum, as well as the option of not implementing the activity;
- (d) public information and participation which provide all interested and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in such information and participation procedures;
- (e) reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;
- (f) investigation and formulation of arrangements for the monitoring and management of impacts, and the assessment of the effectiveness of such arrangements after their implementation;
- (g) coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;
- (h) that the findings and recommendations flowing from such investigation, the general objectives of integrated environmental management laid down in this Act and the principles of environmental management set out in section 2 are taken into account in any decision made by an organ of state in relation to the proposed policy, programme, plan or project; and
- (i) that environmental attributes identified in the compilation of information and maps as contemplated in subsection (3) are considered.”

RESPONSE (8 - 17)

Your comments are noted, Arcus GIBB is of the opinion that all the above requirements have been met in this EIA process. The EIA process and Draft EIR have been reviewed by respected and experienced peer reviewers, who found the EIA process to have been conducted in a fair and equitable manner. Their report is attached as an Appendix to the Revised Draft EIR.

There are competing rights in life and the Constitution requires the balance thereof. No right is absolute but all rights are qualified in terms of section 36 of the Constitution, which limits rights. As such, all parties interested in or affected by the proposed Nuclear-1 project need to be sensitive to all the citizens' rights, including those who need electricity and Eskom's. One of the function of the EIA process is to balance the rights and responsibilities of different parties. There is no development project that has absolutely no impacts. Thus, in all instances, some parties are affected, negatively or positively. The purpose in this instance is to determine a fair balance between the benefits of the users of electricity and the impacts (negative and positive) that will accrue to those who will be affected in the area around the proposed power station.

YOUR COMMENT (18 - 22)

MANDATES

18. It is important to appreciate the mandate and role of the State in relation to the promotion of ecologically sustainable development and the protection of the environment, and the distinction between the mandates of different organs of state such as the Department of Environment (“DEA”) and the National Nuclear Regulator (“NNR”).
19. The State as a whole is responsible for taking the reasonable legislative and other measures referred to in section 24 of the Constitution. The State is also required to act as a public trustee in relation to the environment as a whole,¹⁰ and specifically in relation to biological diversity¹¹ and the coastal zone and coastal public property.¹²

¹⁰ NEMA section 24(4)(o).

20. The DEA has specific responsibility for environmental protection, and within the national sphere of government the DEA together with the national Minister responsible for environmental affairs, is primarily responsible for protecting the environment and implementing NEMA and other environmental legislation. Therefore in performing its functions the DEA must always bear in mind its responsibility to give effect the State's mandate as public trustee of the environment, biological diversity, and coastal public property.
21. In the context of an EIA process, the DEA's primary responsibility is to ensure that NEMA is applied in a manner consistent with section 24 of the Constitution and that the EIA process collects, analyses and assesses all relevant information in a manner that will enable the competent authority to make a properly informed decision as to whether or not the proposed Nuclear-1 development is ecologically sustainable and constitutes justifiable economic and social development.
22. The proposed Nuclear-1 project has the potential to have very significant long-term environmental and socio-economic impacts, many of which will affect future generations who cannot participate in the EIA process. This means that it is particularly important that in this EIA process the DEA should apply a high standard of care and adopt a strongly precautionary approach. The DEA must ensure that the EIA process is conducted rigorously, that there is full compliance with relevant regulations and guidelines and that the information provided, the assessments conducted and the conclusions reached, are of a very high standard. It is clear from the draft EIAR that this standard has not been achieved.

RESPONSE (18 - 22)

The allegation that a very high standard of EIA has not been achieved is unfounded and has not even been substantiated in your submission. The standard applied to the EIA is high and the comment from the public, including yourselves, is highly valuable and taken into account. Further, you must note that there are differing comments and all of them have to be considered, including your own.

Comment submitted during the public participation of the Draft EIR have been taken into consideration, and where relevant, specialist studies have been extended to address specific and general comments. Arcus GIBB is confident that the revised Draft Environmental Impact Report will address any short comings of the DEIR. The public will have an opportunity to comment on the Revised Draft EIR.

The Department of Environmental Affairs has taken steps to ensure that their review is adequate, including appointing a panel of experts to review the report.

YOUR COMMENT (23 - 25)

23. As explained in the draft EIAR, the National Nuclear Regulator Act ("NNRA") gives the National Nuclear Regulator ("NNR") a mandate to provide for the protection of persons, property and the environment against nuclear damage through the establishment of safety standards and regulatory practices. Eskom is required in terms of section 21 of the NNRA to apply to the NNR for a nuclear installation licence before it can site, construct, operate, decontaminate or

¹¹ The National Environmental Management: Biodiversity Act 10 of 2004 provides that the State is the trustee of biological diversity and must manage, conserve and sustain South Africa's biodiversity and its components and genetic resources; and carry out its functions to achieve the progressive realization of the rights contained in section 24 of the Constitution (section 3).

¹² The National Environmental Management: Integrated Coastal Management Act 24 of 2008 provides that the State must act as trustee of the coastal zone (section 3(a)), must hold coastal public property in trust on behalf of the citizens of the Republic (section 11(1)) and must ensure that coastal public property is used, managed, protected, conserved and enhance in the interests of the whole community and for the benefit of present and future generations (section 12).

decommission a nuclear installation. Persons who may be directly affected by the granting of such a licence may make representation to the NNR board relating to health, safety and environmental issues¹³ and if the board is of the opinion that further public debate is necessary, it may arrange public hearings to discuss these issues.¹⁴

24. It is important to appreciate that although the proposed Nuclear-1 Nuclear Power Plant (“NPP”) cannot be constructed unless authorised both by an environmental authorisation issued by the DEA under NEMA and a nuclear installation licence issued by the NNR under the NNRA, this does not mean that the mandates and decision-making powers of the DEA and the NNR in relation to the assessment of the risk arising from ionising radiation and nuclear safety are identical. On the contrary, the DEA and the NNR must each exercise their powers in relation to these matters in accordance with the legislation from which they derive their powers (i.e. NEMA and the NNRA respectively). As the Constitutional Court emphasised in the case of Fuel Retailers Association of Southern Africa v Director-General Environmental Management; Department of Agriculture, Conservation and Environment, Mpumalanga Province and Others¹⁵ (“the Fuel Retailers case”) in EIA processes environmental authorities such as the DEA:
- 24.1. must determine whether or not socio-economic development is justified in the light of the need to protect the environment and must integrate a consideration of impact on the environment, sustainable development and social and economic interests into its decision-making (paragraph 79);
 - 24.2. must both identify and predict the actual and potential impacts on socio-economic conditions and consider ways of minimising negative impacts while maximising benefits (paragraph 80); and
 - 24.3. must apply a risk averse and cautious approach that takes account of the limitation on present knowledge and the cumulative impacts of a development (paragraph 81).
25. These obligations arise from NEMA and with the exception of the requirement to apply a risk averse and cautious approach, would not apply to the NNR when making a decision concerning a nuclear installation licence. The NNR is not required to consider whether or not a proposed nuclear installation is environmentally justifiable. In the Fuel Retailers case the Constitutional Court found that an environmental authority had wrongly assumed that a local authority’s duty in terms of the Town-Planning and Townships Ordinance, 1986 to assess the “need and desirability” of a proposed development imposed the same obligation as the duty on the environmental authority under NEMA to consider the social, economic and environmental impacts of the proposed development (paragraph 86). The Fuel Retailers case makes it clear that in cases where more than one authority is required to make a decision under different legislation, each such authority must make its own decision in accordance with the legislation under which it is acting.

RESPONSE (23 - 25)

It has been indicated in public fora and in EIA documentation that the separation between the EIA process and the NNR licensing process is based on the legislative provisions of the relevant statutes, namely the National Environmental Management Act, 1998 and the National Nuclear Regulator Act, 1999, as well as the DEA / NNR co-operative agreement that governs the consideration of radiological issues in EIA processes.

Eskom’s application to the NNR for licensing of the proposed power station has not yet commenced and will only commence once the vendor has been selected. Commencement of this process in parallel to the EIA process is not practical since NNR cannot issue a Nuclear installation license without an identified and confirmed site, or without a confirmed design for the nuclear power station, which is vendor specific.

¹³ NNRA section 21(4)(a).

¹⁴ NNRA section 21(4)(b).

¹⁵ 2007(6) SA 4(CC).

The NNR's licensing process does make provision for public hearings and is subject to the provisions of the Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000), as are all authorisation processes to which the public has access. The NNR's process is therefore required to be an open and transparent process.

The agreement between the DEA and the NNR indicates that the DEA would not "make a pronouncement on the acceptability" of radiological safety issues, and that this issue (associated with severe accidents) falls firmly within the ambit on the NNR licensing process. However, at the DEA's request, information relevant to radiological safety issues has been included in the Draft EIR.

Apart from the environmental authorisation, there are many other authorisations that need to be obtained before construction of the nuclear power station can be considered, some of which will be informed by studies carried out in the EIA. .

The radiological aspects associated with this project including the impacts of handling and storage of radioactive waste, the emergency preparedness report, seismic aspects which are relevant to the EIA and so on have been included in the Revised Draft EIR to an appropriate level of detail for the DEA to consider the aspects that influence the environmental and socio-economic impacts. Further broader aspects such as resource planning and climate change, which will influence the national and longer term sustainability aspects, have been included into the report and will inform the DEA's decision.

YOUR COMMENTS (26-28)

LEGAL REQUIREMENTS FOR EIA PROCESS

26. The EIA process must be conducted in accordance with the EIA Regulations and in a manner that meets the standards of administrative justice. Section 33 of the Constitution requires that administrative action be procedurally fair. Procedural fairness requires that parties affected by decision must be allowed to participate meaningfully in matters that will affect them.¹⁶ Requirements for administrative action affecting the public are set out extensively in section 4 of the Promotion of Administrative Justice Act ("PAJA").
27. The particular procedures to be followed and steps that must be taken during an EIA process are prescribed in NEMA and the EIA regulations. NEMA provides in section 24(4)(d) that I&APs must be given a reasonable opportunity to participate in public information and participation procedures and the EIA regulations specify the content of those procedures in some detail.
28. The ability of some I&APs to participate effectively in the EIA process has been hampered by:
 - 28.1. difficulties in obtaining access to information held by Eskom or the EAP;
 - 28.2. the limited number and restricted availability of reports (including the draft EIAR) and the fact that relevant information was only available in English.

RESPONSE (26-28)

Your comments are noted. The members of Sea Vista and other disadvantaged communities have been consulted to determine the most effective methods of communication. They have been provided with Afrikaans and Xhosa versions of the Draft EIR Executive Summary. In view of the low levels of

¹⁶ *Matatiele Municipality and Others vs President of the Republic of South Africa and Others* 2007 (1 BCLR 47) (CC) at paras 66 to 67.

literacy in Sea Vista, extensive public meetings have been held in this community (in addition to the meetings that have been held in the neighbouring St. Francis) to explain the findings of the EIA process. These meetings were held in English, Afrikaans and Xhosa, with translation being provided during the meetings. In addition, a delegation from the Sea Vista community has also been taken on a site visit to Koeberg Nuclear Power Station, at the community's request, to capacitate the community to understand the issues and impacts associated with a nuclear power station. Furthermore, a meeting was held with the Sea Vista community on 18 November 2010 to agree on a communication process that will meet their needs during the public participation of the Revised Draft Environmental Impact Assessment. On this basis, it has been agreed that Afrikaans and Xhosa translations of all specialist report executive summaries, as well as the executive summary of the EIR. Times when it would best suit the Sea Vista community to attend meetings have also been determined, and the public participation programme and communication techniques for the Revised Draft EIR are being designed around these community needs.

YOUR COMMENTS (29- 33)

PREMATURE COMMENCEMENT OF EIA PROCESS

29. Most of the fundamental deficiencies in the draft EIAR are attributable to the fact that Eskom commenced the EIA process prematurely and prior to the completion of appropriate processes:
 - 29.1. to decide whether or not the generation of electricity by means of nuclear power plants should be part of the energy mix for South Africa, and if so, to what extent and when;
 - 29.2. to decide what NPP technology (if any) should be adopted taking into account a range of factors including safety and affordability;
 - 29.3. to identify potential sites at which NPPs could be constructed.
30. Commencing an EIA process prematurely distorts the decision-making process and will result in poor decision-making. The legal effect of "putting the cart before the horse" and commencing an EIA process prematurely is that it will expose the decision at the end of the process to the risk of being reviewed and set aside on the basis that it is "unreasonable" from a legal perspective. For example, the information gaps and uncertainties created by a distorted decision-making process and the consequent flawed methodology adopted in an attempt to deal with these deficiencies, will mean that material information will not be before the decision-maker when the decision about whether or not to grant an environmental authorisation is made.
31. An EIA process is intended to assess the actual and potential environmental impacts of a specific proposed development or activity that is described with sufficient particularity to enable the likely impacts of that activity or project to be identified, their significance assessed, and comparisons made with alternative ways of conducting that activity and with the option of not undertaking the activity or project. The EIA procedures specified in the EIA regulations are intended to result in environmental authorisations for precisely identified activities and to impose specific and detailed conditions that can be monitored and where necessary, enforced. In this case the Applicant (Eskom) is attempting to rely on generalised information to obtain an environmental authorisation that will allow the construction of any pressurized water reactor nuclear power station that falls within the very general parameters on which the specialist studies in the draft EIAR are based. The many information gaps and deficiencies identified in the draft EIAR are symptomatic of an attempt to use the EIA process for purposes for which it was not designed.
32. One of the negative consequences of the premature initiation of the EIA process is that it creates the risk of that the decision-making process will be fragmented (sometimes referred to as "piece meal" decision-making or as "salami-slicing" a decision). If this approach is adopted, the decision-maker makes a series of decisions instead of first gathering all relevant information and then making a properly informed decision. This means that the decision-maker makes initial decisions

based on incomplete information (e.g. a decision to authorise a NPP of an unspecified nature) which is then supplemented by a series of further decisions that elaborate upon the initial decision as more information becomes available. This is highly undesirable, because the most important decisions which establish the framework for subsequent decisions are based on insufficient information and there is a very significant risk that by the time all the relevant information is available it may be apparent that had this information been available at the outset, a different decision would have been made. However by the time it is discovered that the original decision was inappropriate, it is too late to change it.

33. In this case the failure to follow an appropriate decision-making process means that the nuclear technology to be used has not yet been identified and according it is impossible to undertake a credible scientific evaluation of the environmental impacts of the proposed Nuclear-1 development. In an attempt to circumvent this difficulty the EAP and Eskom are attempting to follow a procedure that allows the NNP to make a decision on nuclear safety issues and to evaluate the nuclear technology to be used, at a later stage once this information becomes available. This approach means that it will not be possible to determine the best practicable environmental option by simultaneously evaluating all relevant factors (including alternative technologies, sites and designs).

RESPONSE (29- 33)

This application for environmental authorisation relates specifically to the biophysical, social and economic impacts of NEMA-listed activities relevant to the construction of a Nuclear Power Station in three specific physical environments: Duynefontein, Bantamsklip and Thyspunt. It does not aim to establish the energy mix to be implemented in South Africa in terms of energy provision as that imperative falls within the ambit of the IRP and IRP 2010 processes. Further, if Eskom waits for all the decisions and plans to be in place, the country will suffer as there will not be sufficient electricity to supply all customers. There is no legal requirement for any entity to have all long terms plans for everything available and scrutinised by the public, particularly in a sector that is already heavily regulated., before it carries out its business and meets public needs.

EIA as an environmental management tool in South Africa is activity- and project-based, and is not intended to facilitate strategic decision-making on the energy mix for South Africa. Thus, all power station EIAs that have been undertaken on behalf of Eskom have been specific to a particular form of generation technology. The decision of the proportion of nuclear technology vs. other generation alternatives lies outside the scope of the EIA process and is within the sphere of the IRP 2010 process. This approach to the EIA has been accepted and approved by the relevant environmental authority (the DEA) in its approval of the Scoping Report and the approval of the Plan of Study for EIA..

In terms of the technology to be used an envelope of criteria is used which is based on specifications criteria enveloping all possible PWR Generation III vendors and represents a conservative set of criteria that provides a “worst case scenario” in terms of the footprint and impacts of the proposed plant and related infrastructure.

The selection of a site appropriate for a nuclear power station needs to be comprehensive specifically because of the physical aspects such as seismic and geotechnical criteria. It is for this reason that Eskom initiated the NSIP process pro-actively. In order to find more suitable sites another comprehensive study would be required and a minimum of 5 years of detailed monitoring with respect to the seismic criteria once potential sites were selected. It is for this reason that other sites were not looked for in this process since without the detailed monitoring they cannot be regarded as feasible and reasonable sites in terms of this EIA.

However, a review of the NSIP information was undertaken during the scoping phase of this Scoping and EIA process and the information was found to continue to be valid. Much of the information (e.g. geotechnical information) has not changed over time as the environment stays constant with respect to such issues. Detailed site-level biophysical assessments have been undertaken for all three alternative sites to ensure that the information with respect to the physical environment is current. In addition, the socially focused specialist studies have provided up to date information from published sources and directly from sources within the affected communities.

Considering the time it takes to complete an EIA process for a nuclear power station, the potential need for additional installed base load capacity in the near future and the impact of not having sufficient generating capacity to meet the demands of South Africa the timing of this EIA is appropriate. The level of information in this EIA is very extensive, specifically when compared with other EIAs of similar complexity.

YOUR COMMENTS (33- 38)

1.1 Decision-making sequence

34. Prior to undertaking an EIA to determine whether or not the environmental and socio-economic impacts of constructing a nuclear power station on a particular site or sites are acceptable, it is incumbent upon the state and Eskom (as the parastatal with primary responsibility for electricity generation) to determine whether or not South Africa's future energy needs should be met by the generation of electricity using nuclear power plants (particularly given the long time periods involved in construction and decommissioning nuclear power plants and the very high costs of these processes), and if so, when these should be constructed. This has not been done.
35. The first step in this process is to assess an appropriate energy mix for South Africa which requires assessing the viability and desirability of other technologies (particularly those from renewable energy sources) and how these may be optimally combined. Most of this information will become available when the process to produce the second national Integrated Resources Plan ("IRP2") which is currently underway, is completed. In this regard it is important to appreciate that since the first Integrated Resources Plan ("IRP1") very significant advances have been made in wind, solar and other renewable energy technologies and in the means of integrating this power within a national grid. Indeed many countries such as Spain already derive a very significant proportion of their base load energy requirements from renewable energy sources. Unless proper studies are undertaken to determine an appropriate energy mix for South Africa and to evaluate the current state of all technologies, and the costs and benefits of using each technology, it will not be possible to identify the best practicable environmental option, or even to know whether it is in the national interests to construct a nuclear power plant at this stage.
36. If, and only if, a thorough assessment of South Africa's energy requirements indicates that it would be appropriate to construct a nuclear power station, should the decision to do so be taken. A decision of this magnitude should be taken by the national Cabinet and not simply by Eskom, particularly considering the long-term strategic implications of this energy generation path and its potential to have very significant socio-economic impacts on the South African populace via increased electricity prices to pay for the high costs of this technology, the decommissioning of such sites, and the perpetual storage of radioactive waste generated by them.
37. If a decision is taken to pursue nuclear generation, the next step should be to mandate Eskom to identify appropriate nuclear technology. It is insufficient to simply indicate that a generic class of nuclear technology, namely pressurised water reactors ("PWRs"), will be employed. The exact technology to be used will have substantial implication on both the cost (hence the socio-

economic impacts) and also on safety issues. For example, the draft EIR indicates that Eskom favours Generation III technology on safety grounds, but it may well be that South Africa would not be able to afford such technology without imposing socially unacceptable increases in the electricity price. This would mean that the entire EIA process would have proceeded on an incorrect assumption and would have to be redone. In this regard it is important to note that the construction of the first Generation III nuclear plant in France, which commenced in 2005 and was due to be completed in 2009, is now scheduled for completion in 2012 and the actual costs will be more than double the estimated costs (see Thyspunt Response Executive Summary, p1).

38. Once appropriate technologies have been identified, assessed and compared to determine the best practicable environmental option, potential sites should be identified and evaluated to prepare a short-list of the most appropriate sites which can then be evaluated as alternatives during an EIA process. As discussed in paragraphs 70 to 71 below, the premature selection of sites has also distorted this decision-making process and is likely to result in sub-optimal decisions.

RESPONSE (33- 38)

Your comments are noted. However as stated in response to items 29-33, this application for environmental authorisation relates specifically to a Nuclear Power Station on three specific sites: Duynfontein, Bantamsklip and Thyspunt. It does not aim to establish the energy mix to be implemented in South Africa in terms of energy provision, as this falls within the ambit of the Integrated Resource Plan (IRP) and IRP 2010 processes. This is not within the scope of the Environmental Impact Assessment process as defined by the National Environmental Management Act ("NEMA"). The Draft IRP2010 was made available in November 2010 and a final IRP 2010 is expected early in 2011. Carrying out EIAs for generating options which are not included in the IRP are not limited to Eskom. Many EIAs for renewable technologies are being carried out. The introduction of significant renewable technologies will also have socio – economic impacts, including the cost of electricity. However, it remains important for these studies to continue so that the demands for electricity can be met and the country is not exposed to the impacts of insufficient electricity supply.

YOUR COMMENTS (39 - 45)

1.2 Material information not yet available

39. It is also apparent from the draft EIR that certain crucial information which may have a significant impact on the choice of technology, the design of the plant and consequently its costs and socio-economic impact, as well as the potential risks created for the environment and for human health, are not yet available. For example, the draft EIR states that:

“Based on work completed to date none of the alternative sites are considered to have any seismic disqualifiers. Future information will be developed from the Senior Seismic Hazard Advisory Committee (SSHAC) process. This process will only be completed within the next two to three years and could result in the seismic risk rating of the respective site either increasing or decreasing.

The design basis for standard nuclear power stations is considered to be based on a seismic risk of 0.3g. A rating beyond this value would necessitate the re-evaluation and design of a standard plant, resulting in potentially significant financial additions to the overall construction and operation costs of the plant.” (Page 5)

“Thyspunt demonstrates considerably lower risk with respect to any future variations arising from the SSHAC process, which is in the process of being completed for the three alternative sites. Depending on the outcomes of this process, possible subsequent deviations from a standard nuclear power station design, which is more likely to be the case for the Bantamsklip and Duynefontein sites, will result in potentially significant cost and time delays to Nuclear-1 should it be authorised.”

40. Although the above quote indicates that the prospects of the results of the SSHAC process resulting in a revision of the design parameters for a nuclear power plant at the Thyspunt site is lower than that at the other two sites, it makes it clear that the outcome of this process could have a significant impact on the design and cost of the NPP. Clearly it also has the potential to affect the choice of technology. This provides yet another illustration of why the EIR process is premature. The SSHAC process which is currently underway is designed to obtain information which is relevant to the choice of site, the choice of technology, the design of the plant, the costs of construction and operation and the environmental and socio-economic impacts. The missing information is not mere detail but is fundamental to the decision-making processes which should precede any decision to undertake an EIA in respect of a particular site. The SSHAC process should be completed before a decision is made regarding the respective merits of the alternative sites, and the technology and the information from the study should also be taken into account in any subsequent EIA process.

1.3 Failure to Identify Proposed Nuclear Technology Prior to Commencement of EIA

41. The executive summary in the draft EIAR notes that:

“A nuclear power station of standard Generation III design is favoured by Eskom due to the operational simplicity and rugged design availability, reduced possibility of core melt accidents, minimal effect on the environment, optimal fuel use and minimal waste output.

Detailed descriptions of the proposed nuclear plant are not available, as the preferred supply has not been selected. The approach used in this EIA process has been to specify enveloping environmental and other relevant requirements, to which the power station design and placement on site must comply. The enveloping criteria have been developed to ensure that they represent the most conservative parameters associated with the various plant alternatives within the PWR technologies.” (Page 3) (emphasis added)

42. It is clear from the above that instead of conducting an EIA process in respect of a specific activity (i.e. the constructions, operation and decommissioning of a particular type of nuclear power station with a particular design and performance parameters) the EIA is more in the nature of a strategic environmental assessment to determine the environmental and socio economic parameters which would apply to the construction of nuclear power stations on the selected sites. Determining these parameters (referred to as the “envelope”) may provide useful information to inform the choice of an appropriate technology, but this approach is insufficient to justify the issuing of an environmental authorisation any particular nuclear power station. In order for an environmental authorisation to be granted in respect of a particular development which involves specific listed activities, specific information must be provided in order firstly, to enable an accurate identification and assessment of the impact to be made, and secondly to enable a comparison to be made between different alternative technologies.
43. It is premature to undertake an EIA in respect of a very major industrial development without having a clear design or very specific design parameters for the technology in question. In this case an EIA is being done for a nuclear power plant using undefined technology (apart from the fact that it will be a pressurized water reactor type), that has not been designed, has an indeterminate footprint, and which will require the use of ancillary infrastructure which also has not

been designed (e.g. offshore marine pipelines for abstracting sea water and emitting heated water and brine, and an Eastern access road along an undetermined route).

44. No proper scientific assessment of the environmental and socio-economic impacts of Nuclear-1 can be made unless a decision has been made on the nature of the nuclear power technology to be used and this technology is described with sufficient particularity to enable the environmental and socio-economic impacts of using it, to be determined and assessed. The effects of premature initiation of the EIA process is apparent in the vagueness of the project description which does not even restrict the project to “standard Generation III design” as stated above the draft EIAR merely indicates that this design “favoured by Eskom”. This suggests that even if an environmental authorisation were to be issued in respect of Nuclear-1 on the basis of the information presently contained in the draft EIAR, the environmental authorisation would be unacceptably vague in that it would not identify with sufficient particularity, exactly what it was authorising.

45. The project description does not indicate the preferred technology or even how many reactors would be required (the submission by Mike Kantey of Watercourse CC indicates that in order to achieve the desired 4000MW two EPR reactors would be required or three AP1000 reactors).

RESPONSE (39 - 45)

Technology to be used

In terms of the technology to be used an envelope of criteria is used which is based on the specifications all possible PWR III generation vendors and represents a conservative set of criteria that provides a “worst case scenario” in terms of the footprint of the proposed plant and related infrastructure. Furthermore, the Koeberg Nuclear Power Station, which employs similar technology to the proposed Nuclear-1 (but which provides approximately half the generating capacity of Nuclear-1), provides a useful example of an existing development against which potential environmental impacts of Nuclear-1 can be identified and assessed, as it is based on Pressurised Water Reactor (PWR) technology, which is also proposed for Niuclear-1. The PWR technology on which Generation III reactors is based has been in operation for several decades and the impacts of this form of technology are therefore well known and documented. The construction and operational impacts of a nuclear power station in the South African context have been measured at Koeberg, and have been taken into account in the preparation of the Nuclear-1 EIA. Reference to the experience at Koeberg is indeed also a requirement of the DEA’s approval of the Plan of Study for EIA.

The consistent dataset of criteria can be likened to specifications of a product’s performance characteristics, although the brand of the product is unknown at this stage. It has been made clear in public meetings that if any of the chosen power station designs are substantially compliant with the criteria data set, these will be considered.

SSHAC seismic studies

The need for additional studies stems from changing requirements in the international nuclear licensing regulatory environment. The nuclear licensing methodology previously used to conduct a Probabilistic Seismic Hazard Assessment (PSHA) for the three proposed nuclear sites (termed the Parametric-Historic approach), is based predominantly on statistical inference from the seismic catalogue, and was developed to deal with the uncertainty and incompleteness of the seismic catalogues (which is often the case). At the time of implementation the Parametric-Historic approach was peer-reviewed and accepted internationally, as well as by the National Nuclear Regulator.

However, regulations for the siting of nuclear facilities are subjected to a process of continuous improvement and hence the publication of the US NRC published regulatory guide (RG) 1.208 in 2007 had a direct impact on the siting of nuclear sites in South Africa from a nuclear licence perspective. US regulations represent an important benchmark since there are at present no specific South African regulations regarding the licensing of nuclear power plant sites. Eskom therefore follows the regulations of the United States Nuclear Regulatory Commission (US NRC), which is considered to be the most stringent and detailed (and tested) set of regulations in the world. Also, by following US NRC regulations Eskom will also comply to IAEA regulations (which represents the second of the two sets of internationally accepted regulations used for the siting of nuclear power stations).

RG 1.208 described a new approach to define site specific ground motion and dictated that multiple experts be involved in the geological, geophysical, and seismological data, as well as the need to address the uncertainties that are inherent to all geological and seismological models. The Parametric-Historic approach does not fully conform to the requirements of this newly released internationally accepted guideline and could therefore no longer provide the necessary level of nuclear licensing regulatory assurance. Hence the Seismic Hazard Analysis for the three sites has to be repeated.

The new PSHA represents an improvement on the previous work and will better define and constrain uncertainties contained in geological and seismological models, but does not invalidate the work done to date. Hence the existing seismic hazard results can be used to make recommendations regarding site suitability in this EIA. The results of a PSHA, which will be done according to the SSHAC Level 3 methodology, will form the baselines in the updated relevant Chapter of the Site Safety Report (SSR). The SSR is a document that is to be submitted to the South African National Nuclear Regulator who will then, based upon this data, decide whether or not to authorise a nuclear installation at any of the sites.

YOUR COMMENTS (46 - 49)

1.4 Absence of Design for Proposed Development

46. The absence of a site-specific design for Nuclear-1 means that it is impossible to assess the potential risks associated with design basis accident (“DBA”) releases. For example the air quality specialist report explicitly states that:

“It must be emphasised that whilst it is believed that this assessment has provided a realistically conservative envelope of DBA impacts, it can only be completed once the actual reactor design has been selected.” (Page 124).

47. Despite the complexity of the issues involved in relation to assessing the detailed risks of accidents at nuclear power stations, it is clear that in the absence of a design, there can be no scientific or realistic assessment of the risks associated with the design of the plant, the likely or possible impacts that flow from that, or the relative merits of different designs (i.e. alternative technologies).

48. The exact type of nuclear technology employed and the design of the particular plant will also affect the footprint of the plant and its environmental impact. For example the executive summary of the draft EIAR acknowledges that:

“The potential impact associated with larger volume excavations in sand will however be significant to varying degrees on all of the alternative sites, depending on the final footprints chosen.” (Page 6)

49. It is clear in the case of the Thyspunt site that the complex dual dynamics mean that the footprint of the plant and ancillary infrastructure including access roads, desalination plants etc. are material to determining the environmental impact of Nuclear-1 and that these cannot be properly assessed in the absence of specific information regarding the technology to be used, the design of the plant and ancillary infrastructure, and their location on the site.

RESPONSE (46 - 49)

The Revised Draft EIR recommends a footprint within which the power station must be located. This is, by definition, the area within which the power station must be located to ensure that it does not impact on the sensitive areas as identified in the specialist reports undertaken for the EIA. A sensitivity mapping exercise was undertaken on the basis of the sensitive areas identified by the relevant specialists, and a results recommended footprint was identified.

The characteristics of the designs that are provided by the different vendors are not so different from each other that it is impossible to identify the impacts with a reasonable degree of certainty required for an EIA. The Consistent Dataset on which the characteristics of a PWR power station has been indicated, was conservative enough to ensure that “worst case scenario” impacts are assessed. The consistent data set provides detailed information, which enables a detailed environmental assessment.

YOUR COMMENTS (50 – 53)

SOCIO-ECONOMIC IMPACT AND ELECTRICITY PRICES

50. The type of nuclear technology employed and the design of the plant and associated infrastructure (in particular the marine pipelines, access roads, desalination plants etc) are also directly relevant to a determination of the socio-economic impacts of the proposed development because Eskom will recover the costs of financing the proposed Nuclear-1 via the electricity price.
51. The socio-economic impacts of passing on the cost of constructing, operating and decommissioning Nuclear-1 to electricity consumers has not been assessed, apparently because the EAP believes that the unit price of electricity from a nuclear power station over the life-time of the NPP will be lower than for electricity generated from coal-fired power stations and that the cost of electricity from wind, solar and wave energy mean that they are not economic alternatives at present.¹⁷ These assumptions are all highly questionable and indicate that the expert has not investigated these issues sufficiently. However even if these unsubstantiated assumptions were correct (which is denied) it is still important to assess the negative socio-economic impacts associated with the recovery of the costs associated with Nuclear-1 for the purposes of complying with NEMA and to facilitate comparisons with other technologies.
52. International experience indicates that the construction of nuclear power plants always costs significantly more than anticipated and generally takes much longer than anticipated. The process of decommissioning nuclear power stations and the costs of doing so, as well as the costs of storing high level radioactive waste indefinitely, are poorly understood but are certainly very significant. This means that authorising the construction of a nuclear power plant without understanding: (a) the likely cost of construction (which depends on a variety of issues including the type of technology selected, the design of the plant and environmental factors such as seismic risk); (b) the risk of price escalation; and (c) the anticipated costs of decommissioning the plant and storing radioactive waste indefinitely, means that significant socio-economic impacts, such as increased electricity prices, cannot be assessed and indeed have not been assessed in the draft EIAR.

¹⁷ EIA Economic Report, February 2010, section 4.5.2, p64.

53. This is a particularly significant issue because it is probable that the costs associated with both decommissioning the NPP and storing radioactive waste, which will be borne by a generation which did not benefit from the generation of the electricity from the NPP. Consequently there is a real risk of infringing the environmental right of future generations which is protected in section 24 of the Constitution. (It is important to appreciate that section 24 refers specifically to the right to have the environment protected “for the benefit of present and future generations” and that the precautionary approach required by NEMA is particularly apposite in relation to the assessment of potential infringement of the environmental right of future generations.)

RESPONSE (50- 53)

The comparative electricity prices associated with the employment of renewable and other technologies for electricity generation have not been assessed. Please refer to responses to points 29-33 in this regard.

Evaluating the costs and benefits of nuclear power vs. other forms of power generation is not a function of this EIA process, but is a decision to be taken in the IRP 2010 process. Please refer to the above responses in this regard.

The cost of decommissioning is addressed in the amended Economic Impact Assessment, which will be attached as Appendix E17 of the Revised Draft EIR. In Section 3.3.3.4 of this report, it is international practice to use a figure of 15% to estimate the cost of decommissioning a nuclear power station. If this is applied to the constant estimated reactor cost, the cost of decommissioning is estimated at between R17.5 and R20.0 billion in 2009 prices.

The Draft Integrated Resource Plan which was released by the Department of Energy in November 2010 was informed by an independent study carried out by Electric Power Research Institute (EPRI).

The nuclear power generation regime in SA and in many other countries is highly regulated according to international best practises and standards and the protection of current and future generation principals are enshrine in these practices.

The NNR licence will require a decommissioning fund to be set aside and that is built up over time to ensure that by the time the power plant has to be decommissioned, there will be sufficient funds for decommissioning. Further, as power plants are by their nature long-term assets with decommissioning taking place after many decades, this instance is not different from any power station where costs are incurred in the future and have to be addressed in the future. It is not a unique or isolated case.

YOUR COMMENTS (54 - 63) **DECISION-MAKING BY NNR**

54. According to the draft EIAR (section 6.3.5) the NNR and the then DEAT signed a DEAT-NNR Cooperative Governance Agreement (CGA) on 15 June 2006 but this agreement was subsequently superseded by a new DEAT-NNR Cooperative Agreement that was signed on 31 August 2007 and 6 September 2007 by DEAT and NNR respectively. On 18 July 2008 the latter agreement entitled “*Memorandum of Cooperative Agreement in respect of the Monitoring and Control of Radioactive Material or Exposure to Ionising Radiation*” was published as GN 759 in Government Gazette No. 31232. Article II of the agreement deals with “The co-ordination of functions with respect of (sic) the monitoring and control of radioactive material and exposure to ionising radiation” and in relation to the issuing of environmental impact assessment authorisations for the construction and operation, where applicable, of nuclear installations in terms of NEMA or ECA, that article provides that the DEAT will have lead responsibility, the NNR

will have support responsibility, and that co-operation will be achieved "through a mechanism and process as established by the DEAT and the NNR".

55. On 30 January 2009 the Director-General of DEAT (as it then was) issued a document entitled *Statement By The Director-General Concerning The Consideration of Matters Pertaining to Nuclear Safety in Environmental Impact Assessment Process in Nuclear Installations* in which she stated that she was of the opinion that the National Nuclear Regulator Act 47 of 1999 and the regulations made under it are administered by experts in the field of nuclear safety, radiation and radiology through an administratively just process, that these issues are better placed within the regulatory process of the NNRA and that consideration of these issues in an EIA process would result in unnecessary and avoidable duplication. Accordingly the Director-General concluded that:

"I have therefore decided that, as detailed in the agreement between DEAT and the NNR dated 15 June 2006 (Attached as Annexure C), these issues would fall outside the ambit of the EIA process and that the Department would not make pronouncement on the acceptability of these impacts. Any authorisation granted for Nuclear installations would accordingly be conditional on the necessary nuclear licence being in place."

56. It is unclear why the Statement by the Director-General refers to the agreement dated 15 June 2006 if that agreement had already been superseded by the agreement published in the Gazette on 18 July 2008. The draft EIAR does not throw any light on this important issue and merely records that:

"Arcus GIBB requested a written clarification on the difference between the CGA and the statement issued in February 2009 November 2009. However, at the time of writing this report, such clarification had not yet been issued."

57. For the purposes of these comments it has been assumed that the Director-General's statement should have referred to the agreement gazetted on 18 July 2008, and it appears that this approach is consistent with that taken by the EAP. For example, the Plan of Study for EIA ("PoS") states that :

" The human health risk assessment study will continue to form part of the detailed impact assessment phase of the environmental authorisation process because it was communicated to I&AP's and key stakeholders as part of the scoping. However, based on an agreement between the DEA and the NNR, the study will not be assessed by the DEA and thus the DEA will not make any decisions in this regard. The NNR will be the responsible authority regarding human health risk assessment".¹⁸

58. The Director-General's Statement correctly acknowledges:

- o "the need for the DG in applications for Environmental Authorisations for nuclear installations to consider issues of nuclear safety, radiation and radiology." (Page 2) ;
- o "nuclear safety, radiation and radiology are matters of concern in an environmental impact assessment process". (penultimate paragraph); and
- o that in attempting to streamline procedures relating to the consideration of radiological issues raised or identified in an EIA process, it is essential to ensure that the approach adopted:

"does not compromise the mandates and independence of the respective authorities" (page 4).

¹⁸ PoS p30, para 4.5.15.

59. However the DG erroneously concludes that the relevant procedures can be streamlined and duplication avoided by the DEA abdicating its responsibility to consider nuclear safety, radiation and radiology during the EIA process and relying on the NNR to consider these issues during the nuclear licence application process under the NNRA.
60. It is quite clear that the DEA and the NNR have different mandates and that the processes that must be followed by the NNR and the matters which must be considered by it in deciding whether or not to grant a licence for a nuclear facility under the NNRA are very different from the procedure to be followed and the matters to be considered by the DEA as the competent authority in deciding whether or not to grant an environmental authorisation under NEMA in respect of a nuclear power plant. For example, under the NNRA, any person who may be directly affected by the granting of a nuclear installation licence may make representations to the Board within 30 days of the publication of the application¹⁹ and “if the Board is of the opinion that further public debate is necessary, it may arrange for such hearings on health, safety and environmental issues as it determines”.²⁰ It is immediately apparent that the class of persons who may comment is narrower than under NEMA and that the nature and degree of public participation (beyond submitting written comments) is left to the discretion of the Board. In other words, the opportunities for effective public participation under the NNRA are significantly less than under NEMA.
61. Furthermore, NEMA requires a consideration of alternatives, including alternative technologies, whereas there is no such requirement under the NNRA. This means that if nuclear safety, radiation and radiology issues are assessed under the NNRA exclusively, it will mean that the assessment of alternatives required by NEMA will not have been complied with.
62. The procedure proposed in the Director-General’s statement amounts to agreeing that a vital part of the assessment process that is required to make a decision as to whether or not to grant an environmental authorisation under NEMA can be left to be decided by another organ of state that is not the competent authority to make such decisions, at a later date, on the basis of information that is not yet available (e.g. concerning the type of nuclear technology to be used and the design of the plant) and in terms of a process and considerations that are specified under other legislation (i.e. the NNRA). It is clear from the Fuel Retailers case discussed above that this would amount to an unlawful delegation of the statutory duties of DEA as the competent authority in relation to environmental authorisations, to the NNR.
63. The legal effect of the proposed arrangement between the DEA and NNR in relation to these issues is that:
- 63.1. the DEA has abdicated its responsibility to consider a range of material impacts which it is required by NEMA and the EIA Regulations to consider in arriving at a decision as to whether or not to grant an environmental authorisation, and if so, the terms and consideration on which such an authorisation should be granted;
 - 63.2. it would be procedurally unfair in that it would deprive interested and affected parties of procedural rights to participate in an EIA process in relation to one of the most critical aspects of the proposed Nuclear-1 project and one of great public concern, namely nuclear safety and the potential impacts on human health;
 - 63.3. to the extent that the DEA would rely on the determination of the NNR in relation to such matters instead of exercising its own discretion (based on a consideration of material facts including representations made by the NNR) it would be unlawfully “acting under the dictation” of the NNR and in so doing would fail to fulfil its legislative mandate; and

¹⁹ NNR section 21(4)(a).

²⁰ Section 21(4)(b).

- 63.4. if the DEA made a decision to grant an environmental authorisation without considering these matters, it would have failed to comply with a mandatory requirement of law and that decision would be vulnerable to being set aside on review.

RESPONSE (54 - 63)

As previously stated, it has been indicated in public forums and in EIA documentation, the separation between the EIA process and the NNR licensing process is based on the legislative provisions of the relevant Acts, namely the National Environmental Management Act, 1998 and the National Nuclear Regulator Act, 1999, as well as the DEA / NNR co-operative agreement that governs the consideration of radiological issues in EIA processes. It is the EAP's view that the NNR/DEA agreement does not result in DEA abdicating responsibility and that the radiological aspects which are relevant to the EIA will be assessed by the DEA, the DEA however is not mandated to make a pronouncement on the radiological safety of the plant and will therefore include a condition in the Environmental Authorisation that relevant NNR approvals must be in place. With regard to alternatives, these are considered in terms of NEMA and are discussed in the EIA documentation for Nuclear 1. The NNR will ensure that the technology chosen by the proponent complies with International and National licensing requirements which have been developed specifically with regard to the safety of employees and surrounding communities. Neither the EIA process or the NNR process will dictate the specific technology or plant. However, alternatives have been assessed in the Nuclear 1 EIA as required by NEMA.

YOUR COMMENTS (64-73)

CONSIDERATION OF ALTERNATIVES

64. NEMA section 24(4) (quoted in paragraph 17 above), requires that the potential consequences and environmental impacts of alternatives to the activity for which an environmental authorisation is sought, be assessed and their significance determined, including the option of not implementing the activity (colloquially referred to as the "no go option").

65. Regulation 1 of the EIA regulations provides that:

"alternatives, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity; and
- (e) the operational aspects of the activity;"

66. The *Department of Environmental Affairs and Tourism Guideline 5: Assessment of Alternatives and Impacts* (2006) states that:

"the identification, description, evaluation and comparison of alternatives are important for ensuring the objectivity of the assessment process. In cases where there are no objectives and no assessment of alternatives, the EIA process usually only confirms a chosen activity and the value of the assessment as an input to decision-making may be compromised."

67. The EIA Regulations provide that I&APs must be provided with an opportunity of providing inputs into the process of formulating alternatives and that the alternatives that are considered in an assessment process must be reasonable and feasible. The Guideline quoted above stipulates that the process of selecting alternatives should be clearly documented and that reasons should be provided for the elimination of any alternatives.

68. One of the main reasons for requiring the consideration of alternatives is to enable the best practicable environmental option to be identified. The 'best practicable environmental option' is defined in NEMA as:

“the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society in the long term as well as in the short term.”²¹

Failure to adequately consider alternatives and identify the best practicable environmental option results in a deficient and flawed environmental decision making process.

69. As discussed in the paragraphs referred to below, the EIA process is flawed and unlawful in that it has:

- 69.1. failed to give adequate consideration to the use of non-nuclear electricity-generating technologies (paragraphs 72 to 73 below);
- 69.2. failed to give adequate consideration to alternative sites by confining itself to a consideration of the sites identified during a process conducted approximately 28 years ago which used criteria that are no longer relevant (paragraphs 70 to 71 below);
- 69.3. failed to identify, assess and compare the benefits of different nuclear technologies in order to identify the best practicable environmental option (paragraphs 41 to 45 above).

1.5 Identification and Consideration of Alternative Sites

70. The original site selection program the Nuclear Site Investigation Program (“NSIP”), was conducted in the 1980’s. The original Eskom brief required that any site chosen for nuclear development was not to be within 100 kilometres of any of the homelands. The public was excluded from the selection process and most of documentation was classed as “restricted” or “confidential”. The basis for selection of possible sites, according to the NSIP, was primarily related to the geological and engineering suitability of the site for the construction of an NPP. It is clear, from an analysis of the NSIP as a whole, that other considerations such as the environment were given a lesser weighting. The original date set for the choice of site was based on an NPP with an 1800MW capacity, whereas the current proposal is for a 4000MW nuclear power station. A much larger work force is required than what was originally envisaged and it is unclear that the site selected will be able to provide adequate services to cope with the increased demand. Since the completion of the NSIP a lucrative squid industry has developed. The NSIP is more than 20 years old and fails to take into account the economic impact that the nuclear power stations will have on this industry.

71. The socio-economic and legal context has changed dramatically since the 1980’s and today proposed development projects must be evaluated not only on economic and social criteria but also on the basis of their impact on the environment and the degree to which they are consistent with ecologically sustainable development. Today the government is recognised in law as the trustee of our environment and must ensure that development is ecologically sustainable whilst promoting justifiable economic and social development. Our courts have recognised that the Constitution, by including environmental rights as fundamental justifiable human rights (section 24), by necessary implication requires that environmental considerations be accorded appropriate recognition and respect in the administrative processes of South Africa. Legislation such as NEMA expressly recognises that sensitive, vulnerable, highly dynamic ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure (section 2(4)(r)). This means that if a nuclear site investigation

²¹ NEMA definitions section 1

programme were to be undertaken today, far greater weight would have to be given to environmental protection and this would profoundly affect the selection of sites.

1.6 Consideration of Alternative Technologies

72. The draft EIAR states on page 12 that:

“As far as power generation technologies are concerned, nuclear generation and coal-fired power generation are the only proven base-load technologies. Of these two, **coal-fired generation is not viable in the coastal regions of the Western Cape and Eastern Cape.** The life cycle contributions of nuclear electricity generation to greenhouse gas emissions is small compared to coal-fired electricity generation. This points to nuclear generated electricity being a necessary part of South Africa’s strategy to generate an additional 40 000 MW of electricity by 2025. Renewable energy sources such as solar and wind energy do not provide the guaranteed base-load generation capacity that is required.”

73. The above statement is inaccurate and reveals that inadequate consideration was given to the evaluation of non-nuclear technologies. Senior energy researchers at the Energy Research Centre at the University of Cape Town believe that renewable energy sources can be used to provide base-load generation capacity and indeed are already used in other countries for this purpose. They point out that even though nuclear power may prove to be the best alternative for these purposes, renewable energy sources now provide a credible alternative and should be investigated. In this regard, it is instructive to note that the Long Term Mitigation Scenario report (“LTMS report”) which investigated various scenarios for mitigating the emission of greenhouse gasses included a scenario for meeting South Africa’s energy needs and mitigating greenhouse gas emissions by using renewable energy sources without the use of nuclear power. This scientific and well researched study modelled this scenario to 2050 and indicates that the assumption made by Eskom and the EAP in the current EIA process that other forms of technology can be discounted without being evaluated, is erroneous.

RESPONSE (64 –73)

This application for environmental authorisation relates specifically to the impacts of a Nuclear Power Station at one of three specific sites: Duynfontein, Bantamsklip and Thyspunt. It does not aim to establish the energy mix to be implemented in South Africa in terms of energy provision as this falls within the ambit of the IRP and IRP 2010 processes. As such site and layout alternatives were assessed as reasonable and feasible alternatives in terms of the application for environmental authorisation. As indicated above, this approach has been accepted by the competent authority, the Department of Environmental Affairs.

The application for authorisation is specifically for a nuclear power station, there are other EIA’s being carried out for renewable and other technologies at different locations in South Africa based on criteria such as the resource of wind, solar, coal and gas.

Lastly, the selection of a site appropriate for a nuclear power station needs to be comprehensive specifically because of the physical aspects such as seismic and geotechnical criteria. It is for this reason that Eskom initiated the process pro actively. In order to find more suitable sites another comprehensive study would be required and a minimum of five years of detailed monitoring with respect to the physical criteria once potential sites were selected. It is for this reason that other sites were not looked for in this process, since without this detailed monitoring they cannot be regarded as feasible and reasonable sites in terms of the EIA. Further, it is impossible to have the whole country as a potential site for a single activity. The proponent has to propose some sites for consideration and focus assessment on these sites.

However, a review of the NSIP information was undertaken during the scoping phase of this Scoping and EIA process and the majority of the information was found to continue to be valid. Much of the

information (e.g. geotechnical information) has not changed over time as the environment stays constant with respect to such issues. Detailed site-level biophysical assessments have been undertaken for all three alternative sites to ensure that the information with respect to the physical environment is as current as possible. In addition, the socially focused specialist studies have provided up to date information from published sources and directly from sources within the affected communities.

We refer you to the Draft Integrated Resource Plan which includes a technology and cost evaluation of technologies. The LTMS did include a scenario of only renewable technologies. This does not infer that this was a feasible option. Such feasibility could only be assessed in a full investigation of all technologies, which has been carried out in the IRP process.

YOUR COMMENTS (74)
DEFICIENCIES IN PUBLIC PARTICIPATION PROCESS

74. As indicated in the Thyspunt Response Executive Summary and the analyses of the various specialist studies undertaken by or on behalf of the Thyspunt Alliance, there has been no or inadequate consultation with a number of interested and affected parties including the Squid Fisheries Industry Association and the Independent Scientific Study Group established to monitor and research the squid industry.

RESPONSE (74)

Specialist studies conducted as part of the EIA process have been compiled by recognised specialists in their respective fields and have all conducted extensive fieldwork in order to not only collect data and to acquaint themselves fully with the alternative sites. In terms of consultation with the squid industry the marine scientists considering marine ecology impacts associated with the Nuclear 1 development are required to base any assessment on published and peer reviewed information. As such, the report to date has not included meetings or interviews with community leaders or role players.

Following the St. Francis Key Stakeholder Prof. Charles Griffiths made contact with Mr. Greg Christy who indicated that he has unpublished information from the Chokka Fish Association which showed that 30% of the chokka stock would be lost should spoil be dumped at sea at the Thyspunt site. Although Mr. Christy agreed to pass the data on, Professor Griffiths has to date not received any such data from him. Prof. Griffiths then proceeded to contact Dr Warwick Sauer (the consultant for the chokka fisherman & Rhodes University academic). Dr Sauer said the only information available was over a decade old and had been published and that confirmed that the most recent scientific information for the Thyspunt area was collected as part of the Marine Assessment for the Nuclear-1 EIA. Mr. Christy thereafter contacted Professor Griffiths and indicated that he was not aware what data Professor Griffiths was waiting for he suggested that Dr Hans Verhey of Marine and Coastal Management be contacted.

The steps taken thereafter to ensure the information available is up to date included the following:

1. Contact Dr Verhey. He heads the Squid working group but is not a squid expert.
2. Contact Dr Nikki Downey (Squid expert based at Bay World in Port Elizabeth). She has indicated that is underway on the effects of turbidity and temperature, but that this is not available yet. She referred the specialist to a further contact at the DEA's Directorate of Marine Coastal Management (MCM) - Dr Jean Mwicigis. Dr. Jean Mwicigis indicated that she has access to unpublished info which is relevant to the marine assessment. She agreed to contact her superior in order to put together a formal report.

3. The marine specialists have searched through all scientific papers published in the South African and international literature to ensure we have the most recent information to work with. It appears that no clear information exists to indicate that Thyspunt is an important site for the Chokka as a species, although it might be important for the fishery industry.

Any data the marine specialists have obtained through this process will be reflected in their revised study which will form part of the Revised Draft EIR which is to be made available for public review.

YOUR COMMENTS (75)

75. The EAP has failed to adequately cater for the language requirements of I&APs and to make key documents, including the draft EIAR and Environmental Management Plan ("EMP"), accessible. Only English versions of these documents were made available to members of Sea Vista Community and only one hard copy of the draft EIAR was provided for the entire St Francis, Cape St Francis and Sea Vista area. The Sea Vista community are predominantly Xhosa and Afrikaans speaking and consequently have not been able to meaningfully engage with the EIA process. The *Department of Environmental Affairs and Tourism Guideline 4: Public Participation* (2006) requires that the language needs of participants be addressed, and in particular that provision must be made for illiterate participants.²² This is a serious flaw and potentially violates a number of constitutional rights including the right to equality and the right to procedurally fair administrative action.

RESPONSE (75)

Your comments are noted. The members of Sea Vista and other disadvantaged communities have been consulted to determine the most effective methods of communication. They have been provided with Afrikaans and Xhosa versions of the DEIR Executive Summary. In view of the low levels of literacy in this community, extensive public meetings have been held to explain the findings of the EIA process. Please refer to Response 26-28 above,

YOUR COMMENTS (76 – 77)

FAILURE TO ASSESS NUCLEAR SAFETY ISSUES AND RISK OF SEVERE ACCIDENTS

76. The draft EIAR must deal in full with nuclear safety issues and the risk of severe accidents in order to enable DEA to fulfil its legislative mandate which requires it to consider all the environmental and socio-economic impacts of the proposed development. This will require the consideration of a number of important issues not currently dealt with in the draft EIAR including how to evacuate the community of Greater St Francis area (approximately 30,000 people during peak holiday season) in the event of a severe accident. The absence of such an assessment prevents I&APs from assessing whether or not they believe that the benefits of the proposed Nuclear-1 NPP will outweigh the risk.

77. The draft EIAR appears to deal with nuclear safety issues by assuming that the NPP will be operated in a manner that complies with the emission specifications provided by the manufacturers of that technology and then assessing whether or not this would create a significant risk to human health or the environment with reference to standards produced by nuclear industry bodies. Unsurprisingly the finding is that there would not be any significant risk (although the ingestion pathway does not appear to have been assessed). However the draft EIA should disclose the amounts (in Becquerels per annum) of radioactive substances such as Cesium-137 and Strontium-90 that will be released as airborne emissions or as effluent during normal

²² Page 22.

operations and the consequences of significant amounts being released in the event of an accident or design based failure.

RESPONSE (76-77)

The agreement between the DEA and the NNR indicates that the DEA would not “make a pronouncement on the acceptability” of radiological safety issues, and that this issue (severe accidents) falls firmly within the ambit on the NNR licensing process. However, at the DEA’s request, information relevant to radiological safety issues has been included in the Draft EIR.

YOUR COMMENTS (78 - 79)

FAILURE TO IDENTIFY AND ASSESS ALTERNATIVES FOR HANDLING, STORAGE AND DISPOSAL OF HIGH-LEVEL RADIOACTIVE MATERIALS

78. The draft EIAR fails to identify and assess alternatives for handling, storage and disposal of nuclear fuels, and radioactive materials and waste (including low, medium and high-level waste) despite the fact that the construction of facilities or infrastructure for inter alia, the storage or disposal of nuclear fuels, radioactive products and waste, are listed activities which may not be undertaken with an environmental authorisation.²³ These alternatives must be identified and their environmental and socio-economic impacts must be assessed.

79. The transportation, handling and storage of radioactive waste are of particular concern since no long-term repository for the storage of high-level radioactive waste exists. Accordingly the DEA should apply a precautionary approach and not approve the establishment of any facility that generates high level radioactive waste until such time as a long-term repository has been identified and approved pursuant to an EIA process.

RESPONSE (78 - 79)

A Nuclear Waste specialist study has been included in the Revised Draft EIR, which will be provided for public comment as an Appendix to the Revised Draft EIR.

The impacts of handling and storage of radioactive waste is a matter that is firmly within the ambit of the NNR and the newly established National Radioactive Waste Disposal Institute. The disposal of low and intermediate level radioactive waste will be undertaken at a facility that is licensed for this purpose (Vaalputs waste disposal site) and the impacts of disposal are therefore adequately managed within legally accepted criteria. This disposal site is audited on a regular basis against legal requirements.

The transportation of radio-active material will, for safety and security purposes not be transported via a set route. As per the current Koeberg operations practises, the future power station will, in accordance with NNR regulations, obtain the necessary authorisations at a future point in time to transport low and intermediate radio-active waste. It is therefore not possible to assess a particular route with respect to the transport of radioactive waste.

YOUR COMMENTS (80)

INCOMPLETE INFORMATION

80. As indicated in the Thyspunt Response Executive Summary and the analyses of the various specialist studies undertaken by or on behalf of the Thyspunt Alliance, the information provided in the draft EIAR is incomplete in many material respects. In our view it will not be possible to address the information gaps adequately without following a proper decision-making sequence but

²³ See activity 1(b) listed in the regulations published as GN R387 of 21 April 2006.

in any event the draft EIR requires very substantial amendment and supplementing before it could be relied upon to inform a decision about whether or not to issue an environmental authorisation.

RESPONSE (80)

Your comments are noted. The Draft EIR is currently being revised. Where information was found to be erroneously omitted from the first draft, it will be included in the revised Draft EIR which will be made available for public comment and review.

YOUR COMMENTS (81 - 82)

RELIANCE IS PLACED ON INCORRECT OR UNVERIFIED INFORMATION

81. As indicated in the Thyspunt Response Executive Summary and the analyses of the various specialist studies undertaken by or on behalf of the Thyspunt Alliance, the information provided in the draft EIAR is incorrect in many material respects. For example, the draft EIAR does not characterise prevailing winds correctly or consistently and this has a significant effect on the assessment of a number of potential impacts (see Appendix 4, review of KIM Roberts re chapter 8 of draft EIAR). The many errors must be corrected and I&APs must be given an opportunity to comment on the revised information.
82. In several cases assessments are based on unverified information provided by the applicant Eskom (e.g. information regarding emissions from the Koeberg NPS and the anticipated emissions from various types of nuclear technology being considered for Nuclear-1). No serious attempt appears to have been made to ensure that this information is independently verified.

RESPONSE (81 - 82)

The information regarding wind direction in the Draft EIR has been verified and found to be consistent with the wind rose information contained in the Air Quality report (Appendix E10 of the Draft EIR). Individuals at the St Francis Bay public meeting did not read the report correctly. Subsequent to the meeting GIBB took time to personally explain the technical information to the individual.

Information regarding emissions from Koeberg Nuclear Power Station is based on monitoring reports that have been verified by the National Nuclear Regulator and reviewed by the air quality specialist. As in any other EIA process, the Environmental Assessment Practitioner relies on the accuracy of the project description information provided by the applicant.

YOUR COMMENTS (83 – 84)

SPECIALIST STUDIES INADEQUATE

83. As indicated in the Thyspunt Response Executive Summary and the analyses of the various specialist studies undertaken by or on behalf of the Thyspunt Alliance, the quality of the specialist reports is inadequate, and the sheer number of errors, omissions and discrepancies suggest a lack of attention to detail which raises questions about the substantive accuracy of the specialist reports, and is confusing for I&APs.
84. Many of the specialist reports do not comply with the conditions imposed in the Final Plan of Study for EIA (this is unsurprisingly considering that many of the specialist reports predate the final PoS). These specialist studies must be revised. A consistent shortcoming of the specialist reports is the paucity of local information (mainly as a consequence of insufficient engagement with local people and consideration of local information) and an apparent failure to verify the information by conducting site visits and investigations (“ground-truthing”).

RESPONSE (83 – 84)

The Draft EIR and associated specialist studies are currently being revised. Where the studies are found to be incorrect and where any changes identified fall within the scope of the current EIA, it will be corrected in the revised Draft EIR which will be made available for public comment and review. In some cases the specialists appointed by the Thyspunt Alliance base their opinions on studies which are not verified and have not been peer reviewed. The specialist studies carried out by the specialists contracted by Arcus GIBB are based on verified data and information. Claims of inaccurate data in Nuclear-1 EIA reports have been reviewed and, where necessary, additional studies have been undertaken by the EIA team to verify whether the risks claimed by these interested parties are indeed accurate. An example is the investigation into the risk of debris flows at Thyspunt. This risk was claimed to exist at Thyspunt, but after detailed investigation, it was found that there is no evidence of this having occurred at or close to the site, or of the conditions that would enable debris flow to take place.

YOUR COMMENTS (85) **FLAWED METHODOLOGY**

85. The EIA process fails to evaluate the environmental impacts of the transmission lines, which are required for the sole purpose of serving the proposed Nuclear-1 plant and must therefore be considered to be an integral part of the proposed development and be assessed accordingly.

RESPONSE (85)

The impacts associated with the Transmission lines have been considered as far as possible during this EIA process. It is likely that the Environmental Impact Reports for Duynefontein and Thyspunt Tx integration will be submitted to the authorities at approximately the same time. Whilst it might be ideal to consider the potential impacts of the power station and all three transmission corridors in a single document, this is not practically possible and would result in an unmanageable process and in all likelihood a set of documentation that would make understanding of the key issues impossible. At this stage, the Draft EIR for the power station includes 24 different specialist studies and is a very lengthy document (six volumes). This amount of information is already difficult to manage and digest by the public and quadrupling the volume of this documentation by including all three power line corridors (most of which include a number of different corridors in widely dispersed areas) is not practical. It is in recognition of these facts that the DEA has approved the approach of one EIA process for the nuclear power station site and three separate EIA processes for the transmission lines.

YOUR COMMENTS (85 - 89)

86. The findings of the specialist studies are poorly integrated and do not produce an holistic assessment of the impacts, including cumulative and synergistic impacts. Cumulative impacts in particular are inadequately dealt with and it is not clear how the assessment of cumulative impacts affected the selection of Thyspunt as the preferred site.

RESPONSE (86)

Cumulative impacts have been discussed where relevant. All specialists were required to assess the potential for cumulative impacts, and are discussed throughout Sections 9.3 to 9.27, where relevant. Potential cumulative impacts are expressly discussed with regards to the selection of site alternatives, particular with respect to the decision to remove Bantamsklip from consideration as a site alternative in Section 9.28(b) of the DEIR.

Although it would be ideal to consider the cumulative impacts of the power station and all transmission lines holistically, the time frames of the power station and transmission line EIAs do not overlap (neither do the time frames of the individual transmission EIAs) and therefore, practically, it would only

be possible to assess all cumulative impacts in detail after studying the findings of the transmission EIA reports. Potential cumulative impacts of the power plant will, however, be assessed in the EIAs for the power lines as they will be completed after the EIA for the power plant. Cumulative impacts of the transmission line EIAs are assessed in general terms. For instance, potential cumulative impacts have been explicitly included in the decision not to consider Bantamsklip as an alternative for Nuclear-1.

YOUR COMMENTS (85 - 89)

87. The methodology for assessment of impacts and impact criteria is not clear and relevant information about how the alternative sites were evaluated and compared has not been disclosed to our clients. For example, as indicated in appendix 2 of the submission by the St Francis Bay Resident's Association, the impact rating criteria used are inconsistent and contradictory and result in an inappropriately low consequence and significance rating for local impacts that last for less than 16 years. Furthermore inadequate weighting is given to issues such as the exceptional environmental and heritage value of the Oyster Bay headland bypass dune system. Our clients believe that the combination of inadequate and inaccurate information, faulty evaluation criteria and flawed logic has resulted in the Thyspunt site being identified as the preferred site.

RESPONSE (87)

Your comments are noted. The impacts assessment methodology has been reviewed by independent and respected peer reviewers. The peer review report will be included in the Revised Draft EIR, which will be made available for public comment. This peer review in fact found that the significance of many impacts was in fact overestimated. Accordingly a revision of the impact assessment method has been effected.

YOUR COMMENTS (85 - 89)

88. In some cases the facts do not support the conclusion reached. For example the Freshwater Specialist Study found that despite the very high negative significance of undertaking the proposed development without mitigation, constructing the NPS was preferable to the "no go option", because it would result in the establishment of a controlled conservation area adjacent to the plant which would then protect the remaining wetlands and biodiversity. The establishment of a conservation area is not dependent on the establishment of a NPP on the site (i.e. it could also be established if the "no-go" option is chosen) nor can it be considered as a mitigation measure that reduces the very serious environmental impacts of undertaking the development on that site. At best the establishment of the conservation area can be considered to be an "offset" mechanism but it should not be taken into account as mitigating the negative environmental impacts.

RESPONSE (88)

The statement regarding the potential conservation benefits on p. 11 of the Draft EIR's Executive Summary is based on the findings of the biophysical specialists, and is related to the significant conservation benefits that have been realised through the establishment of the Koeberg Nature Reserve more than 20 years ago.

Development over the past decades (including large recent developments that have been authorised through formal EIA processes), has demonstrated that the ecosystems, physical and biological processes around the site continue to be impacted significantly, even in spite of the subjection of recent developments in this region to EIA processes. The conclusion reached by the biophysical specialists is, therefore, that the current trend of degradation of the environment is likely to continue in the no-go development scenario. The vast majority of the land around the Thyspunt site is covered by

invasive alien plants and the functioning of the mobile bypass dune system has been significantly destroyed by urban developments in St. Francis and by the St. Francis Links Golf Estate. Therefore, the conclusion was reached that the declaration of the Thyspunt site as a formal conservation area, as well as the purchase of significant areas of private land outside the current Eskom-owned land to secure it for conservation, would provide a benefit to conservation. The opinion of the biophysical specialists, based on this experience, is that “Duty of Care” and even legislated EIA processes, cannot be relied on to secure protection of such sensitive environmental systems.

Eskom is currently practicing active conservation at all three alternative sites, although Koeberg Nature Reserve is the only officially declared Nature Reserve.

YOUR COMMENTS (89)

89. The EIA report is being prepared for consideration by one or more decision-makers who are required by the national environmental management principles in section 2 of NEMA to apply a risk-averse and cautious approach that takes into account the limits of current knowledge about the consequences of decisions and actions.²⁴ There is a great deal of uncertainty about the potential consequences of establishing a NPP at Thyspunt and accordingly it is appropriate to respond to that uncertainty by taking a conservative and cautious approach. However the draft EIAR often appears to respond to uncertainty concerning the potential impacts (e.g. the impacts on the marine environment or on the coastal headland bypass dune system) by concluding that there is no conclusive evidence of a problem and therefore no reason not to proceed with Nuclear-1. This bias in favour of development (i.e. that the development should proceed unless there is clear evidence that it would cause unacceptable harm) is contrary to the precautionary approach required by law.

RESPONSE (89)

Your comments are noted. GIBB disagrees with your assessment and we contend that we have exercised a reasonable and precautionary approach in our assessment.

YOUR COMMENTS (90 – 91) **APPREHENSION OF BIAS**

90. A number of our clients have commented on the fact that the manner in which the draft EIAR report is written and the fact that it consistently over-emphasises the benefits of locating Nuclear-1 at Thyspunt and understates the negative impacts of doing so, creates the impression that the draft EIAR is not objective and reflects a bias in favour of the proposed development being undertaken at Thyspunt. This also creates the suspicion that the EAP may be less than fully independent, and even if this suspicion is unfounded, the creation of wide-spread apprehension of bias damages the integrity of the process.

91. The apprehension of bias has been created by the cumulative effect of many issues including, for example:

91.1. the gross under-estimation of the likely impacts on the squid fishery and the consequent dramatic under-estimation of the negative social and economic impacts of siting a NPP at Thyspunt, which contributed directly to the conclusion that Thyspunt should be the preferred site;

²⁴ NEMA section 2(4)(a)(vii).

- 91.2. the bizarre conclusion that the “no go option” was less desirable for the unique environment of the Oyster Bay headland bypass dune system than constructing a NPP in the middle of it provided that a controlled conservancy area was established to protect the remnants of the ecosystem (this was clearly also an important factor in contributing to the selection of Thyspunt as the preferred site);
- 91.3. the fact that the benefits of remunerating workers at the NPP is considered but not the negative impacts on consumers and tax-payers associated with raising the funds to construct and decommission it;
- 91.4. the overstatement of local job-creation opportunities (e.g. the draft EIAR report estimates 25% local recruitment for construction of plant but at a public meeting in Sea Vista an Eskom employee informed the audience that this could be as high as 80%);
- 91.5. the failure to consider potential job losses (particularly in tourism and squid industries) are not considered; and
- 91.6. the wholly unrealistic estimates of when construction would commence (2011) and the period which is would take to complete the NPP which contradict various other statements (e.g. to the effect that construction should be preceded by several years of archaeological work on the site).

RESPONSE (90 - 91)

We take note of you comments. However, various conditions for independence of the EAPs are set in Regulations 18 and 19 of Government Notice R 385 of 2006 and the competent environmental authority is empowered to take action against EAPs found to be in transgression. The recommendation of Thyspunt as the preferred site is based on a number of factors, including technical factors, a number of social and biophysical factors, and cost. The evaluation of the sites takes into account factors within all three spheres of sustainability, namely economic, social and biophysical impacts. Arcus GIBB believes that its assessment of the preferred site has thus been based on the relevant and important decision factors. Arcus GIBB furthermore has engaged respected independent peer reviewers to review the DEIR and provide us with an independent opinion on its objectivity and independence. Their findings, that GIBB has exercised its duties in terms of the requirements of the law, will be appended to the Revised Draft EIR.

- 91.1 Your comments are noted. Please refer to our response above to the squid fishing issue.
- 91.2 Please refer to our response to this issue above.
- 91.3 The Economic Impact Assessment provides a reasonable estimation of the costs associated with a nuclear power station.
- 91.4 The estimation of job opportunities for local residents is based on experience with projects such as Medupi Power Station and is not regarded as unreasonable.
- 91.5 Potential job losses in the tourism and fisheries sectors have been explicitly addressed in the Marine and Tourism Assessments (Appendices E15 and 22 of the Draft EIR, respectively);
- 91.6 It was clearly acknowledged in the Draft EIR, as well as in all public meetings, that Eskom’s proposed time frame for the construction of the power station is optimistic. It was also clearly stated that all archaeological mitigation at Thyspunt would have to be completed prior to the commencement of construction.

YOUR COMMENTS (92) **FURTHER STUDIES REQUIRED**

- 92. It is clear from the detailed responses in the Thyspunt Response Executive Summary and the analyses of the various specialist studies undertaken by or on behalf of the Thyspunt Alliance that a significant number of further specialist studies must be undertaken and included in the EIAR. These include specialist assessments and studies relating to:

- 92.1. potential impacts on human health (taking account of radiological and safety issues including the risks of ingesting food contaminated with radioactive substances) (see condition 2.21);
- 92.2. evacuation plans (see Condition 2.13, 2.28);
- 92.3. potential catastrophic incidents;
- 92.4. the economic impacts of a nuclear accident;
- 92.5. the environmental and socio-economic impacts of transportation of radioactive fuels and materials;
- 92.6. life-cycle assessment including impacts and costs of decommissioning plant, the storage and disposal of waste, and consequential socio-economic impacts such as increased electricity prices (condition 2.6 Decommissioning);
- 92.7. the impact on price of electricity and consequent impact on consumers (particularly the poor) of spending unquantifiable amount in excess of R120 billion on construction;
- 92.8. oceanographic impacts such as the impacts of dumping sediment in sea, (particularly on squid industry and surfing); potential storm damage to input pipes, and the implications of sea-level rise;
- 92.9. assessment of economic impacts of adverse impacts on squid industry and surfing-related tourism;
- 92.10. impact on agriculture of construction and operation of 400kV transmission lines;
- 92.11. cost benefit analysis (including realistic assessment of likely escalation in construction costs based on experience in other countries);
- 92.12. full engineering and cost assessment of proposed Eastern access route;
- 92.13. specialist assessment of risks associated with potential debris flow and liquefaction of roads on unstable sands of Oyster Bay headland by-pass dune system; and
- 92.14. a more detailed assessment of geological and seismic hazard (see submission of Dr MKC Roberts, Appendix 4).

RESPONSE (92)

Your comments are noted. GIBB regards the studies it has commissioned for the EIA as sufficient for decision-making.

YOUR COMMENTS (93 - 94) **CONCLUSIONS**

- 93. Our clients believe that the premature initiation of the EIA process for Nuclear-1 has created insuperable problems and attempts to address these problems has resulted in the use of unsound methodologies and has distorted decision-making processes prescribed by law. For example, because Eskom has not yet identified the appropriate technology for Nuclear-1 there is currently insufficient information to assess nuclear safety issues and in order to address this problem, it is

now proposed the NNR will assess nuclear safety issues at a later stage when the relevant information concerning the nature of the nuclear technology and design of the plant, is available. This is unlawful and for this and other reasons referred to above, the EIA process is fatally flawed and any decision made on the basis of an EIAR similar to the draft EIAR, will be vulnerable to being set aside by a court.

94. Furthermore, our clients dispute the information and methodology employed in the draft EIAR that lead to the conclusion that the Thyspunt site is an appropriate site for the establishment of a nuclear power station. On the contrary the geomorphology of the site is unstable and makes it unsuitable for inherent hazardous nuclear activities and other ancillary activities. Furthermore, even on the basis of the limited information in the draft EIAR it is clear that the site has exceptionally high archaeological and cultural value, and that the coastal headland bypassing dune system and associated wetlands and biodiversity, are of global significance. These factors alone should rule it out as a potential site. When other relevant factors such as the negative impacts which the establishment of a nuclear power station would have on the local community, the sense of place and on the local economy (particularly on the squid fisheries and tourism sector), it is clearly inappropriate for Thyspunt to continue to be considered as a potential site for a NPP.

RESPONSE (93 - 94)

Your comments are noted. As previously stated, please note that the Draft EIR and associated specialist studies are currently being revised and that a revised draft will be made available for public comment and review for a period of 45 calendar days (excluding public holidays and public school holidays).

YOUR COMMENT 95

If Eskom persists with this flawed EIA process and continues to seek an environmental authorisation for the construction of Nuclear-1 at the Thyspunt site, our clients intend to take whatever legal measures are available to them to prevent that from occurring.

RESPONSE 95

Your comment is noted.

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

