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Dear Thyspunt Alliance and its members, Mr Cullinan and Ms Kleynhans

RE: ESKOM EIA CONCERNS FOR THE PROPOSED NUCLEAR POWER STATION AND ASSOCIATED INFRASTRUCTURE (DEA Ref. No: 12/12/20/944)

Please find our comments in terms of your submission below.

General

Submitted on behalf of:
The Thyspunt Alliance and its members

Prepared by:
Cormac Cullinan and Lia Kleynhans
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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

DEA	Department of Environment
DEIAR	Draft Environmental Impact Assessment Report
DSR	Draft Scoping Report
EAP	Environmental Assessment Practitioner (i.e. Arcus Gibb)
EIA	Environmental Impact Assessment
EIA Regulations	The NEMA Environmental Impact Assessment regulations, 2006 (GNR.385 of 21 April 2006)
EPZ	Emergency Planning Zone
Eskom	Eskom Holdings Limited (the Applicant for the environmental authorisation)
EUR	European Utility Requirements
HLW	High-Level (Radioactive) Waste
I&APs	Interested and Affected Parties
IRP2	Integrated Resource Plan 2
NEMA	National Environmental Management Act, 107 of 1998
NNR	National Nuclear Regulator
NNRA	National Nuclear Regulator Act 47 of 1999
NPP	Nuclear Power Plant
NSIP	Nuclear Site Investigation Program

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Arcus GIBB (Pty) Ltd, Reg: 1992/007139/07 is a wholly owned subsidiary of GIBB Holdings.
A list of divisional directors is available from the company secretary.

Nuclear-1	The proposed nuclear power plant of up to 4000MW (megawatts)
PAZ	Pro-active Action Zone
PGA	Peak Ground Acceleration
PoS	Plan of Study for EIA
PWR	Pressurised Water Reactor
SECCP	Sustainable Energy and Climate Change Project of Earthlife Africa
SSHAC	Senior Seismic Hazard Advisory Committee
Thyspunt Response Executive Summary	Executive Summary of the Thyspunt Alliance Response to the Nuclear-1 Draft EIAR
UPZ	Urgent Protective Zone

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Comment 1:**1. INTRODUCTION**

1. We represent the Thyspunt Alliance and its member organisations (“our client”). The comments submitted in this memorandum are in respect of the Revised Draft Environmental Impact Assessment Report (“revised DEIAR”) and are submitted on behalf of the Thyspunt Alliance as a whole (and each of its members), each of which are interested and affected parties (“I&APs”) in the environmental impact assessment (“EIA”) process.
2. The comments in this memorandum must be read with:
 - 2.1. the more detailed comments on the revised DEIAR prepared by members of the Thyspunt Alliance which are attached as **Annex A**;
 - 2.2. the comments submitted on behalf of the Thyspunt Alliance and its members in respect of the draft Environmental Impact Assessment Report (“DEIAR”) on 30 June 2010 which are still applicable; and
 - 2.3. the comments on the revised DEIAR submitted by Earthlife Africa and Greenpeace in response to the revised DEIAR, which are endorsed by the Thyspunt Alliance and its member organisations.

Response 1:

We take note of your comments.

Comment 2:

3. In preparing this response to the revised DEIAR we have taken account of the letter dated 30 June 2011 from Arcus Gibb, the environmental impact assessment practitioner in this matter (“EAP”) to us which responds to the comments which we submitted on behalf of our client in respect of the first DEIAR. We have not responded in this document to each of the EAP’s responses in that letter, but the absence of a response to any points made by the EAP should not be interpreted as a concession on our part that we accept the correctness of the response. On the contrary, unless otherwise indicated, the absence of a specific response to the EAP’s comments indicates that we are of the opinion that our original arguments are still valid despite the response from the EAP.

Response 2:

We take note of your comments.

Comment 3:

4. This memorandum focuses on discussing new information and additional issues that were not dealt with in our previous comments on the first DEIAR. Additional studies undertaken on behalf of our client in respect of the proposed nuclear power station and associated infrastructure are attached to this memorandum. For ease of reference we have adopted the same format in this document as in our previous comments of 30 June 2010.

Response 3:

We take note of your comments.

Comment 4:**2. OVERVIEW OF COMMENTS ON REVISED DEIAR**

5. The EAP has responded to the comments which we submitted in respect of the first DEIAR in a letter to us dated 20 March 2011 and by making minor revisions made to the original DEIAR. As appears from the more detailed comments set out below, neither we nor our client consider that the EAP has responded adequately to our previous comments. In our view, it would be unlawful for the Department of Environmental Affairs (“DEA”) as the competent authority to grant an authorisation for the construction of a nuclear power plant (“NPP”) on the Thyspunt site on the basis of the revised DEIAR.

Response 4:

We take note of your comments.

Comment 5:

6. The revised DEAIR continues to suffer from a number of defects, including:
- 6.1. material gaps in the information required by decision-maker to make a properly informed decision;
 - 6.2. a failure to comply adequately or at all with mandatory legal requirements, including the requirements to assess the “no-go” option; to identify and assess feasible alternatives, and to identify and assess the potential environmental and socio-economic impacts of each alternative; and
 - 6.3. the application of inaccurate and misleading methods of evaluating the significance of the impacts identified and of comparing the relative methods of the three possible sites which produces the absurd result that the Thyspunt site has been identified as the preferred option despite the fact that the expert reports clearly indicate that it is the least suitable site from both an environmental and a heritage perspective.

Response 5:

We take note of your comments. Kindly substantiate your comments with respect to what you claim to be material gaps in information required by decision makers.

Kindly substantiate your comments with regards to legal requirements that you claim have not been assessed. The no-go alternative is not considered a feasible and reasonable alternative in this instance, given the current backlog in the construction of new electricity generation capacity and the requirement for an additional 40,000 MW of generation capacity by 2025. A mixture of generation options will be required, as indicated by the Integrated Resource Plan, and no single generation technology will be sufficient to cater for the expected increase in demand in its own. The Department of Environmental Affairs, the decision-making authority for this application, has accepted the reasonable and feasible alternatives that were identified for further assessment at the end of the Scoping Phase. All relevant environmental and social impacts has been assessed in detail in relevant specialist reports in Appendix E of the Revised Draft EIR.

The methodology for assessment of the impacts and for evaluation of the sites has been employed is transparent and has explained in Chapter 10 of the EIR. Each of the three alternative sites have different levels of impact significance related to different aspects of the environment. From a heritage perspective, the revised heritage impact assessment, which was completed after extensive supplementary fieldwork in 2011, confirmed that the level of impact in the proposed footprint of the power station at Thyspunt is very low. Given the concentration of heritage sites along the coastline and the very low incidence of such in the inland portion, the heritage impact of the proposed power station at Thyspunt will be lower than either Duynefontein or Bantamsklip. From a biophysical perspective, there are sensitive ecosystems on the larger Thyspunt property, but the proposed

power station has been positioned on site in such a way as to avoid these sensitive systems. Two of the most sensitive systems on the Thyspunt site are the mobile dunes (including the wetlands found within the dunes) and the wetlands, particularly the Langefontein wetland. The headland dune system has been avoided by placing the power station to the south of it and the Langefontein wetland has also been avoided. Wetland and groundwater modelling has confirmed that the water table that feeds the majority of the Langefontein wetland is not geo-hydrologically connected with the water table where the power station is to be built. This confirms that mitigation measures proposed to prevent drawdown of the water table in the Langefontein wetland during construction are feasible.

Comment 6:

3. MANDATES

3.1 Standard of care and precautionary approach

7. In our comments submitted in respect of the DEIAR (paragraphs 18-22), we indicated that the DEA must apply a high standard of care and adopt a strong precautionary approach when awarding environmental authorisations for NPPs. We asserted that this high standard has not been achieved in this EIA process. In its response letter to us dated 20 March 2011 the EAP stated that this conclusion was unfounded and unsubstantiated.
8. On the contrary, the comments which we submitted in respect of the DEIAR clearly substantiate that conclusion, for example by pointing to the gaps in information, the errors and inadequacies in various expert reports, the shortcomings in the public participation process etc.

Response 6:

Please refer to our response above regarding substantiation of your claims of inadequacies in reporting and gaps in information. The independent peer review of the EIR and the EIA process (Appendix H of the Revised Draft EIR) found no fatal flaws in the public participation process.

Comment 7:

3.2 Mandate of National Nuclear regulator

9. In its response letter to us dated 20 March 2011 the EAP responded to our comments submitted in respect of the DEIAR in relation to the relative mandates of the DEA and National Nuclear Regulator (“NNR”) (see paragraphs 23 to 25 of our comments) by stating that the consideration of radiological issues will be assessed when Eskom applies for a licence from the NNR and that this application process could not be commenced until such a time as the design of the plant is confirmed.
10. We reiterate our view that the NEMA and the regulations made under it require that the environmental and socio-economic impacts of the radioactive emission, both operational and in emergencies, must be assessed as part of the EIA process.
11. The above statement by the EAP supports our view that information about the design of the NPP and the site layout is necessary in order to assess the potential environmental and socio-economic impacts of radioactive emissions. The fact that that information is not currently available merely indicates that the EIA process was commenced prematurely.
12. In our opinion the EAP’s statement that it believes that the revised DEIAR provides information of the possible impacts in respect of the storage and handling of radioactive waste, emergency incidents and seismic reports in sufficient detail for the decision-maker to decide the matter lawfully¹ is a statement of misplaced optimism rather than of fact.

¹ Page 8.

Response 7:

We take note of your comments. As indicated in the EIR, the assessment of the impacts of the proposed power station is based on a Consistent Dataset (Appendix C of the Revised Draft EIR), which represents a worst case scenario of potential inputs and outputs from a Generation III nuclear power station operating under normal conditions. This dataset has been based on the commercially available nuclear power station designs currently available.

Information about radiological emissions under normal operating conditions is provided in the EIR and the environmental impacts of these emissions is assessed. Assessment of the radiological emissions during emergency events and the readiness of the relevant role players to deal with such events is, however, clearly within the ambit of the NNR owing to its legal mandate in terms of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999). As with many different forms of development, construction is dependent on authorisations by a number of different legal entities, including local, provincial and national authorities. Construction of such developments is reliant on all these authorisations being obtained from entities with vastly different legal mandates. Reporting requirements to satisfy all these authorisations vary hugely, and it cannot reasonably be expected that information relevant to all these authorisations should be contained in the EIR.

That being said an assessment of radiological impacts (**Appendix E32**) has now been included in this Revised Draft EIR Version 2. The purpose of this assessment will be to quantify and assess the environmental (health) impacts of normal operational process and "Design Basis Accidents" (DBAs) for Nuclear-1. This assessment will also assess whether the series of external events that happened in Japan in March 2011 could reasonably be expected to cause impacts similar to those of the Fukushima Daiichi nuclear accident to a Generation III nuclear power station constructed at any of the alternative sites considered for Nuclear-1.

ADDITIONAL COMMENTS FROM INDEPENDENT NUCLEAR SPECIALIST

This is a statement of the requirements upon which such processes are based - until such time as a licence application is made the specifically licence requirements cannot be established

Comment 8:**4. LEGAL REQUIREMENTS FOR EIA PROCESS**

13. We reiterate our comments submitted in respect of the original DEIAR (paragraphs 26 to 28).
14. The EAP is required to conduct an EIA process that results in an EIAR for submission to the competent authority which contains the information required by law and which the competent authority requires to make a properly informed decision as to whether or not to authorise some or all of the listed activities for which an environmental authorisation is required, and if so, to select the alternative which the competent authority considers to be the best practicable environmental option ("BPEO") the terms and conditions which the environmental authorisation must be subject to. In making these decisions the competent authority must consider each of the alternatives and their impacts with reference to section 24 of the Constitution, the principles set out in section 2 of the National Environmental Management Act 107 of 1998 ("the NEMA"), the general objectives of integrated environmental management in section 23 of the NEMA, and the factors set out in section 24O of the NEMA.
15. The EAP stated in its letter to us dated 20 March 2011 that "one of the functions of the EIA process is to balance the rights and responsibilities of different parties."²
16. This is incorrect and the EAP's misunderstanding of the purpose of the EIA process has coloured the revised DEIAR. In attempting to strike a balance between the rights and responsibilities of different stakeholders in the process (e.g. between the interests of electricity

² Page 95.

consumers throughout South Africa versus the rights and interests of our clients) the EAP is usurping the role of the competent authority. It is not for the EAP to determine the balances to be struck - the EAP is required to present the facts objectively and independently so that the competent authority is able to make the decision that it is required by law to do. In fact even the competent authority is not required to balance the rights and responsibilities of different parties – it is required to consider the comments of the different parties and then to make the decision on the environmental and related socio-economic grounds as outlined above.

Response 8:

We take note of your comments. One of the fundamental purposes of an EIA process is to determine the costs and benefits of a development proposal. These costs and benefits are not distributed equally across society and thus, the Nuclear-1 EIA process has considered how these impacts are distributed amongst the various groups of society. In a complex project such as this, where many different stakeholders have an interest, and where national interests need to be weighed against local interests, it is particularly necessary to consider how the positive and negative impacts are distributed.

In this regard, we refer you to Section 31(2) of the EIA Regulations (Government Notice No. R 543 of 2010). Subsection (n) indicates what contents are required in an EIR, including the following: “a *reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation*”. In reaching such a “*reasoned opinion*”, it is incumbent upon the Environmental Assessment Practitioner to analyse not only the nature of the impacts, but also their distribution in society. Ignoring the distribution of costs and benefits would not provide the decision-makers with all relevant information required to make an informed decision.

With regards to the consideration of the societal distribution of costs and benefits, guidance on reporting requirements for EIRs (based on a review of international best practice) is provided in Document 15 in the Integrated Environmental Management Guideline Series³. Section 5.3 of this document (*Best Practice Requirements*) refers to a number of reviews of EIA reporting systems world-wide⁴, all of which recommend that an EIR must include the following (emphasis in bold type inserted by GIBB):

- With regards to Assessment and Evaluation of Impacts and Risks of Project and Alternative: Potentially significant impacts and risks for each alternative, before and after mitigation or optimisation, to cover (amongst others):
 - “The distribution of impacts, **namely who would stand to gain and who to lose from the proposed activity**, and whether the distribution of impacts was fair ...”;
- With regards to Evaluation of Alternatives and Trade-offs:
 - “Implications of the proposed activity and alternatives should be systematically compared to enable the most appropriate option to be determined”;
 - “An explicit basis for choice of the most appropriate alternative should be established”;
 - “ ... the **distribution of significant impacts among affected parties** and associated equity and environmental justice implications”; and
 - “Trade-offs should be clarified.”

³ Department of Environmental Affairs and Tourism. 2004. *Environmental Impact Reporting, Integrated Environmental Management, Information Series 15*. Department of Environmental Affairs and Tourism (DEAT). Pretoria.

⁴ De Villiers Brownlie Associates. 2000 (unpublished). *Draft Review Guidelines for Environmental Impact Assessment in the Cape Metropolitan Area*. Prepared for the then Cape Metropolitan Council, in association with Arcus Gibb (Pty) Ltd, the Environmental Evaluation Unit of the University of Cape Town and Sue Lane & Associates. Institute of Environmental Management and Assessment. 2001. *European Commission Review Criteria*. <http://www.iema.net/ceam/reviewcrit.pdf>

European Commission. 2001. *Guidance on EIA-EIS Review, Appendix A: Environmental Information Requirements*. Set out in Annex IV of Directive 97/11/EC. Luxembourg.

- With regards to Overall evaluation of alternatives and of the implications of the proposed activity:
 - “The implications of the proposed activity and alternatives should be systematically compared to enable the most appropriate option to be determined. **As far as possible, the trade-offs should be clarified** and an explicit basis for choice established”.

Clearly, based on these international benchmarks, it is regarded as best practice for the distribution of costs and benefits to be dealt with in an EIR.

Comment 9:

5. PREMATURE COMMENCEMENT OF EIA PROCESS

5.1 Decision-making sequence

17. In comments submitted in respect of the DEIAR, it is pointed out that the commencing of the EIA process prematurely distorts the decision-making process, potentially resulting in poor decision-making (see paragraphs 29-32 of comments in respect of the DEIAR). We confirm our position and assert that the EAP has not adequately addressed our comments in the revised DEIAR.

5.2 Failure to Identify Proposed Nuclear Technology and the design of the proposed development prior to Commencement of EIA

18. The revised DEIAR does not contain any specific information regarding the nature or design of the PWR that the applicant proposes to build and this glaring omission is justified in the executive summary of the revised DEIAR by the statement that:

“A nuclear power station of standard Generation III design is favoured by Eskom due to its operational simplicity and rugged design, availability, reduced possibility of core melting 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 supplier has not been selected.”

19. The EAP reiterates⁵ that “the envelope of criteria is used which is based on the specifications of all possible PWR III Generation vendors or represents a conservative set of criteria that provides “the worst case scenario” in terms of the footprint of the proposed site”.

20. In this regard we refer to the comments submitted by Greenpeace at 5.2. which highlight the fact that: there is no such thing as a standard Generation III design for a NPP.

Response 9:

Indeed there is no standard Generation III design for a nuclear power station, as each vendor’s design differs. However, the Consistent Dataset has been created from a “basket” of the available Generation III nuclear power station designs currently available.

Comment 10:

5.3 The “envelope approach”

21. As previously discussed, Eskom is applying for an environmental authorisation for an “envelope” which will enable it to build any NPP that has biophysical impacts that fall within the ranges used to define the “envelope”. In our view, this process is not authorised by law. Indeed the adoption by Eskom and its EAP of the “envelope approach” is an attempt to circumvent the legal requirement to consider alternatives, including technological alternatives.

22. As indicated in our comments in relation to the first DEIAR, the applicant (i.e. Eskom) must identify the technology which it wishes to use and provide sufficient information about it and about the proposed design of the NPP to enable a proper identification and assessment of the risks to be made. If Eskom wishes to consider several alternative forms of technology, it should propose each of these as an alternative and identify and assess the impacts of each.

⁵ Page 3.

23. The absence of information about the nature, design and layout of the proposed NPP prevents the assessment of specific impacts and means that both the impacts and the corresponding mitigation measures cannot be identified with any degree of certainty or precision as is reflected by the vague and general nature of the impact assessments in the DEIAR. Unless this information is known before the EIA is conducted it is not possible to determine:
- the specific risks posed to human health and the environment;
 - the emergency response measures which would be required to be put in place and the potential impacts of an emergency event, for example involving the release of radiation;
 - the amount of insurance that would be required to cover the risk;
 - the potential liability of Eskom and of the State (which should be insured against); and
 - the socio-economic implications of the risk through enhanced insurance costs to be borne by Eskom and also by residents in the area (household insurance invariably excludes radiation risk).
24. An EIA process is designed to identify and assess the environmental, heritage and socio-economic impacts of various alternatives and to put the necessary information before the competent authority to enable it to make an informed decision, firstly about whether or not the project should be allowed to proceed at all (which involves an evaluation of the project against the “no-go” option) and secondly, if the project is to be authorised, to select and authorise the alternative that the competent authority considers to be the best practicable environmental option. The “envelope” approach means that the competent authority is prevented from exercising its statutory mandate to identify the best alternative since no technological, design or layout alternatives have been identified and assessed. In other words, the DEA is faced with the choice of either approving or rejecting a single “envelope”.
25. The effect of this is that a wide range of considerations which are material to the decision to be made by the competent authority cannot be taken into account in making its decision. Information that is material to identifying and assessing the environmental, heritage and socio-economic impacts of the proposed NPP, such as the precise nature of the PWR technology to be adopted, the design of the plant and ancillary structures, and the plant layout, is not in the revised DEIAR. This means that if the competent authority were to grant an environmental authorisation for an “envelope” it could well be authorising the construction of an NPP which it would not have authorised had it known the full facts. The absence of such crucial information will also prevent the competent authority from identifying the BPEO which is determined by an holistic determination of the interaction of many factors, including technology, plant design, and layout, in the context of a specific site. Consequently if this information is not placed before the competent authority, it will not be in a position to make a properly informed decision and must refuse the application.
26. Authorising an “envelope” without knowing the details of the actual design, layout, etc. of the range of NPPs that are notionally contained within that envelope, would in our view be unlawful. In colloquial terms authorising an envelope would amount to “buying a pig in a poke” (i.e. purchasing something which you have not yet seen). This adage reminds us of the foolishness of such a course of action.

Response 10:

We take note of your comments. Please refer to Response 9 above. As indicated in the EIA process, the envelope of criteria provides a set of specifications to which the proposed nuclear power station must conform.

Since you have used a colloquial adage to illustrate your opinion, it may be appropriate to explain the envelope of criteria in colloquial terms as well, as has been done in public meetings during the Nuclear-1 EIA process. If the envelope of criteria is compared to the specifications for buying a vehicle, this envelope may contain requirements with respect to top speed, fuel efficiency, type of tyres and wheels, fuel tank size, CO₂ emission limits, cruise control, numbers and positions of airbags and a number of other safety systems such as ABS and EBS. The only thing that isn't specified is the brand of vehicle. Providing such a list of criteria would ensure that only a luxury vehicle with certain characteristics could qualify, but that a base model (entry-level vehicle) would

not qualify. Similarly, if a vendor proposes a power station design that fails to comply with the criteria established in the Consistent Dataset, that design will not qualify for consideration.

Comment 11:

6. SOCIO-ECONOMIC IMPACT AND ELECTRICITY PRICES

27. Our client has submitted a response to the Social Impact Assessment Report as part of the revised DEIAR. The response is attached to these submissions as part of **Annex A**.
28. Comments submitted in respect of the first DEIAR highlighted the need to adequately address the socio-economic impacts of the proposed development, as the costs of financing the development of Nuclear-1 will be recovered via electricity prices.⁶ The Social Impact Assessment did not consider any possible future non-nuclear developments taking place at any of the sites. Therefore no comparative analysis is available.
29. The Social Impact Report only considers the social impacts at the construction and operational phase. Little or no consideration is given to the possible socio-economic impacts of a NPP in relation to electricity prices in the revised DEIAR. We refer to our comments in respect of the DEIAR (paragraphs 50-53) in this regard.

Response 11:

Electricity prices are regulated by the National Energy Regulator in terms of the National Energy Regulator Act, 2004 (Act No. 40 of 2004). It is outside the DEA's decision-making mandate under the National Environmental Management Act, 1998 (Act No. 107 of 1998) to make decisions related to electricity prices.

Comment 12:

7. DECISION-MAKING BY NNR

30. We refer to our comments in respect of the DEIAR (paragraphs 53 to 63) in this regard. We further refer to the response to our comments from the EAP. It is indicated that the "neither the EIA process or the NNR process will dictate the specific technology or plant." This is contrary the purpose of the EIA process, as the technology or design of an NPP may have different environmental and socio-economic impacts that must be assessed in the EIA process. We refer to our comments in 5.2 above.

Response 12:

It is common practice in EIA processes, especially for installation of industrial plants, to consider the performance of the systems and type of technology proposed to be installed, without referring to specific suppliers or manufacturers of this technology, of which there may be a range available in the market. As long as the inputs and outputs of the proposed technology are known, it is not necessary to know the brand name of the technology.

ADDITIONAL COMMENTS FROM INDEPENDENT NUCLEAR SPECIALIST

Correct - what is important is to envelop the potential impacts - in addition the EIA cannot predetermine nor prejudice the conditions which may be subsequently emanate from any RoD or other independent process in this regard

Comment 13:

⁶ See Annex A page 13 at paragraphs 50 to 53.

8. CONSIDERATION OF ALTERNATIVES

8.1 Dismissal of renewable energy alternatives

31. As highlighted in the comments submitted on behalf of Earthlife Africa, regulation 31(g) of the EIA Regulations requires an assessment to be conducted in respect of alternatives to the proposed activity and “alternatives” may include alternatives to “the type of activity being undertaken.” Further, section 24(4) of NEMA reiterates the obligation to consider alternatives and a “no-go option” to the proposed activity.⁷ In response to the comments submitted in respect of the DEIAR and the question of alternatives, the EAP responded by stating that “the application for environmental authorisation relates specifically to a Nuclear Power Station on three specific sites... it does not aim to establish the energy mix to be implemented in South Africa... as it falls within the ambit of the...IRP and IRP 2010 processes.”
32. This assertion does not adequately reflect the obligation set out in section 24(4) of NEMA or Regulation 31(g). Further, regulation 31(f) provides that the need and desirability of the proposed activity must be considered. The need and desirability of building a nuclear power station cannot be adequately evaluated if an assessment of alternative technologies (particularly renewable energy sources) is not undertaken. As highlighted in paragraph 25 of the comments to the DEIAR, the identification of the best practicable environmental option, including the no-go option, may only be assessed if alternative technologies are adequately considered and proper studies are undertaken to determine an appropriate energy mix for South Africa.
33. Since we submitted comments on the first DEIAR the Integrated Resource Plan for Electricity 2010 (“IRP II”) has been adopted. The IRP II examines a range of scenarios for meeting South Africa’s energy requirements and considers various policy options. It indicates that the Department of Energy has adopted the policy option of committing to “a full nuclear fleet of 9600 MW” (paragraph 4.4) but also states that:
 “The scenarios indicated that the future capacity requirement could, in theory, be met without nuclear, but that this would increase the risk to security of supply (from a dispatch point of view and being subject to future fuel uncertainty).”
34. The fact that the IRP II contains a scenario in which no new nuclear power stations are constructed (i.e. that it would be viable to meet South Africa’s energy needs without using nuclear power) confirms the validity of our previous comments that renewable energy generation should have been evaluated as an alternative to constructing Nuclear 1. As highlighted in our comments on the first DEIAR in paragraph 73, studies have shown that renewable energy technologies may provide a credible alternative to nuclear power in respect of base-load capabilities and should be investigated. This is reiterated in the comments submitted by Greenpeace in respect of the revised DEIAR (see page 11 of Greenpeace submission).
35. The revised DEIAR states that:
 “South Africa does not have sufficient quantities of indigenous natural gas and does not have the large rivers required for base load hydro-electric power stations”.⁸
 “Only certain electricity generation technologies are presently commercially available, although not necessarily financially viable in South Africa, based largely on the availability of resources (fuel) and geographical constraints.”⁹
36. Renewable energy is dismissed on the basis that it does not provide guaranteed base load capacity. However it is misleading to say that “base load technologies” are required where in fact there are many ways of meeting base load demand, including by using renewable energy sources.

⁷ Section 24(4)(b) - Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must include, with respect to every application for an environmental authorisation and where applicable— (i) investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

⁸ Chapter 4 at 4.2.2

⁹ Chapter 5 at page 8.

37. The revised DEIAR has addressed comments received in respect of the DEIAR indicating a lack of consideration of wind-generated power as an alternative to nuclear-generated power. The revised DEIAR considers the potential environmental impacts of the infrastructure and associated infrastructure for the operation of wind turbines.
38. We reiterate our comment submitted in respect of the DEIAR at paragraph 73. Alternative energy options, particularly renewable energy technologies, are viable and credible and discounting alternative technologies without adequate evaluation is contrary to the obligations set out in NEMA and the EIA Regulations.

Response 13:

We reiterate our response that the environmental application for Nuclear-1 is for a nuclear power station, as has been the case with other power stations such as the gas-fired power stations that have been constructed at Mossel Bay and Atlantis and the Medupi and Kusile coal fired power stations currently under construction. In all these previous instances, the scope of the EIA was restricted to a technology (coal, gas, wind) on a specific site or sites within a defined geographical area. It cannot reasonably be expected that each application for a power station must revisit strategic government decisions that have been taken on the mix of generation technologies that are necessary to meet South Africa's electricity needs. This is especially the case in the instance of the Nuclear-1 application, where the government has, through a consultative process, already taken a decision on the mix of generation technologies required to supply South Africa's future electricity needs for the next two decades. The conclusion of the IRP process, as you have stated, is that nuclear technology must form a part of the mix generation technologies.

We refer to your statement that "... *the identification of the best practicable environmental option, including the no-go option, may only be assessed if alternative technologies are adequately considered and proper studies are undertaken to determine an appropriate energy mix for South Africa.*". Such a study to determine the appropriate energy mix has indeed been undertaken in the IRP. The EIA process, which is a project-specific environmental management tool, does not have any mandate to revisit the strategic analysis of power generation alternatives that was completed in the IRP.

It is indeed true that the IRP II included a scenario excluding nuclear generation, since several different alternatives of different generation mixes were considered. However, the fact the "no-nuclear" options was considered does not imply that this scenario is the most feasible or desirable alternative. It was simply one of a number of scenarios considered. The recommended option of the three considered in the IRP was to commit to a fleet of nuclear power stations. As indicated in the IRP, "*This should provide acceptable assurance of security of supply in the event of a peak oil-type increase in fuel prices and ensure that sufficient dispatchable base-load capacity is constructed to meet demand in peak hours each year*". Therefore, the IRP's conclusion, in the interests of security of supply, is that a no-nuclear scenario is not desirable.

Comment 14:

8.2 Comparative costs of technologies

39. The comparative costs of power generation alternatives have been considered in the revised DEIAR. The comparison is however limited to coal-powered plants and nuclear energy plants, with the conclusion that:
 "the study suggests that no single electricity generating technology can be expected to be the cheapest in all situations. The preferred generating technology will depend on a number of key parameters and the specific circumstances of each project."
40. The comparative costs are inadequately addressed in the report. As highlighted in the comments submitted by the LRC on behalf of Earthlife Africa, "the EIR simply lists some energy sources in a table, without any analysis of their impacts or the significance of those impacts". The IRP II provides for cost effective scenarios which exclude nuclear power with the assertion that security supply can be guaranteed without nuclear power.

41. The revised DEIAR fails to consider the promotion of energy efficiency programmes, which is a cost effective and viable measure to provide electricity security.

Response 14:

We take note of your comments regarding the comparative costs of electricity generation technologies.

It is not factually correct, as indicated in your Comment 14, that the comparison of costs was limited to coal-fired and nuclear power stations. Both of the studies referred to in the Revised Draft EIR compare a wide number of electricity generation technologies, including coal-fired, nuclear, wind and gas. For instance, Figures 5.5 and 5.6 in the Revised Draft EIR, which were obtained from the study by the International Energy Agency (IEA) and the OECD Nuclear Energy Agency (NEA), provide levelised cost of electricity (LCOE) for nuclear, coal, gas and onshore wind power generation. The Electric Power Research Institute (EPRI) report referred to in the Revised Draft EIR provides data on renewable resource technologies (e.g. wind, solar thermal, solar photovoltaic and biomass), fossil fuel technologies and nuclear technologies. Since these studies are international peer reviewed studies, it is not the intention of the EIA to interrogate their findings. The EIA process cannot revisit the conclusions of these studies.

Your following statement refers: *“The IRP II provides for cost effective scenarios which exclude nuclear power with the assertion that security supply (sic) can be guaranteed without nuclear power.”* This statement is not factually correct. As indicated in Response 14, the IRP (Summary, page 6) concludes that a nuclear fleet of 9.6 GW is necessary to account for the uncertainties associated with the costs of renewables and fuels. The IRP conclusion, in Section 8, is *“A commitment to the construction of the nuclear fleet is made based on government policy and reduced risk exposure to future fuel and renewable costs”*.

Comment 15:

8.3 Dismissal of the “no-go” option

42. The revised DEIAR does not assess the no-go option but simply dismisses it as being illogical and unfeasible. Simply stating that the no-go option is “not feasible” amounts to a statement rather than an adequate reason for not considering it. In any event, the no-go option is not required to be feasible, it must be assessed so that the competent authority has the necessary information about what is likely to occur if the application for an environmental authorisation is refused. This has not been done.
43. In response to the “no-nuclear” option, the revised DEIAR states that if the proposed development of an NPP in South Africa is not approved, that Eskom would in all likelihood apply to develop more coal-fired power stations. In our view this statement is misleading, particularly in light of the need to achieve carbon emission reductions (which means that coal-fired power stations are unlikely to be authorised as the BPEO), the fact that the government is providing incentives to renewable energy generators (e.g. through the REFIT programme) and that the IRP II has recognised that it would be viable to meet South Africa’s energy needs without using nuclear power. In other words, if the proposed Nuclear 1 power station were not built at Thyspunt or the other two sites proposed, the most “no-go option” is that the additional electricity generation capacity would be fulfilled by independent renewable energy power producers.

Response 15:

As indicated in our Response 13 above, and as stated elsewhere, the environmental application for Nuclear-1 is for a single nuclear power station. Within the ambit of this project-specific EIA, and given the commitment in the IRP to a fleet of nuclear power stations, as well as the conclusions of the Nuclear-1 Scoping Report that the no-go alternative is not feasible (which report has been accepted by the DEA), it is not considered reasonable to once again review the no-go alternative in this EIA process. Renewable technologies are not able to provide base load requirements. Existing

coal fired power stations will come to the end of life in approximately the next 15 years and will need to be replaced by other base load technologies. The lowest carbon options would be preferable for South Africa. South Africa would therefore have to consider the various technologies including nuclear, coal and potential gas in South Africa and a limited contribution of imported hydro. It is therefore not correct to state that independent renewable energy power producers will meet the demand and the requirement of quality of supply.

Comment 16:

9. DEFICIENCIES IN PUBLIC PARTICIPATION PROCESS

44. We refer to our comments in respect of the DEIAR (paragraphs 74 and 75).

45. One of the new studies in the revised DEIAR is a Heritage Mitigation study. In the introduction to the study the following statement is made:

“We have however conducted significant amount of consultation with respect to mitigation of archaeological sites.”

46. Our client finds it unacceptable that none of the specialist or affected parties in the Eastern Cape was invited to this discussion and therefore contest the significance of the consultation.

Response 16:

The Nuclear-1 EIA process has included numerous opportunities for input into the EIA process. Specialist studies, including the Heritage Impact Assessment, were included in the documentation that has been provided for review of interested and affected parties (I&APs). In addition, meetings with specific heritage role players (e.g. individuals and groups claiming to represent the Gamtkwa First Nation) were convened at their request. Refer, for example, to the minutes of the meeting with the Gamtkwa Council on 27 August 2010.

In response to the requests by groups such as the Thyspunt Alliance to interact directly with the EIA specialists after the Draft EIR was provided for I&AP comment, a specialist workshop was convened in St. Francis on 25 May 2010. The Thyspunt Alliance made significant inputs into the agenda for the workshop and the list of specialists that were requested to attend this workshop. However, the Heritage Specialist was not requested to attend this workshop.

An additional request for another Focus Group Meeting with selected specialists (including the Heritage Specialist) was received during the comment period for the Revised Draft EIR Version 1 and you will be consulted in terms of the scheduling on the meeting.

Furthermore, your quote above from the Heritage Impact Assessment is related specifically to “*mitigation of archaeological sites*” and should be understood in that context. The specific consultations mentioned were therefore of a technical nature and focused organisations and individuals involved professionally in the management of archaeological sites.

SAHRA as the regulator and possessing specialist knowledge have closely monitored the the activities and processes related to the heritage studies including site visits while the excavations were on going.

Comment 17:

10. FAILURE TO ASSESS NUCLEAR SAFETY ISSUES AND RISK OF SEVERE ACCIDENTS

47. We refer to our comments submitted with regard to the DEIAR in this respect (paragraphs 76-77). In response to comments submitted in respect of the DEIAR, the EAP refers to an agreement between the DEA and the NNR indicating that the DEA would not decide on the acceptability of radiological safety issues (“severe accidents”) and that this issue is within the

ambit of the NNR licensing application.¹⁰ Radiological safety issues and the risk of severe accidents affect the environment as well as humans and have not been adequately assessed.

Response 17:

We take note of your comment. In this regard, please refer to Response 7 above. As indicated repeatedly 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, which governs the consideration of radiological issues in EIA processes and the interaction between the DEA and the NNR in terms of their respective mandates for environmental and radiological safety (See Appendix B4 of the Revised Draft EIR). The agreement clearly stipulates that issues of radiological safety are within the mandate of the NNR. Furthermore, it is not within the mandate of the Environmental Assessment Practitioner to question the legal mandates of either of these statutory bodies or the validity of their agreement. We must, therefore, conduct the EIA based on their mandates and their agreement.

In this regard you are also referred to the then DEAT's approval of the Scoping Report, dated 19 November 2008, where the following is stated:

2.21 All radiological issues raised during the EIA process, which are not comprehensively addressed, must be explicitly referred to the NNR to be addressed as part of their process.

This response by the DEAT clearly acknowledges that there are some radiological issues that cannot be comprehensively addressed in the EIA process and can only be addressed in the NNR's nuclear licensing process.

Please refer to Response 7 as well.

ADDITIONAL COMMENTS FROM INDEPENDENT NUCLEAR SPECIALIST

The is a correct statement of the regulatory situation - there is no failure to assess safety and accidents they are part of an overall set of processes of which this EIA forms a component part

Comment 18:

10.1 Emergency and disaster management planning

48. According to the revised DEIAR, the final and detailed emergency plan for each site will be approved by the NNR based on detailed plant-specific safety assessments that must provide final justification for the technical basis of a site's emergency plan.

49. The EIA has been conducted on the assumption that Generation III technology will be used and that the European Utility Requirements (the "EUR") for light water reactors ("LWR") nuclear power plants are appropriate. The revised DEIAR states that:

"it is assumed that the NNR will accept Eskom's proposal, adopted from the European Utility Requirements (EUR) for new reactor designs, for emergency planning zones (EPZs) of 800 m and 3 km for the Proactive Action Zone (PAZ) and the Urgent Protective Zone (UPZ), respectively. Should this not be the case, a re-assessment of the impacts in relevant specialist studies and in the EIR may need to be undertaken. The proposed **PAZ** of 800 m around the proposed power station places limitations on the degree to which the power station footprint can be moved around on the site to adapt to the site's environmental sensitivities. The power station may not be any closer than 800 m from a public road."

¹⁰ See Annex B at page 25 "Response (76-77)".

50. The revised DEIAR states that Eskom has developed a document demonstrating that the proposed nuclear power stations can be built without the need for off-site short-term emergency interventions in line with the EUR requirement.¹¹ These interventions include sheltering, evacuation or iodine prophylaxis. The EUR provides there is no or minimal need for these emergency interventions beyond 800 meters from the reactor and that any delayed action such as the temporary transfer of people will not be required beyond 3 kilometres from the reactor. Further, the document indicates that no long-term action involving permanent (i.e. longer than one year) resettlement of the public will be required at any distance beyond 800 meters from the reactor.
51. The revised DEIAR concludes that:
 “All three sites are acceptable for emergency planning considerations because of the EUR approach to emergency planning followed by Eskom.¹²”
52. In our view the EUR are an unacceptable basis on which to base the EIA, particularly given the legal requirement to adopt a precautionary approach. The EUR requirements are the product of a joint exercise by 12 companies or organisations in Europe all of which are involved in nuclear power generation. These requirements are completely inadequate and have not been endorsed by the International Atomic Energy Agency or by any government nuclear regulator. The EUR are much less onerous than the requirements usually imposed by government regulators. For example the equivalent zones applied:
- 52.1. by the NNR in relation to Koeberg, are 5 kilometres from the reactor for the PAZ and a 16 kilometres for the UPZ; and
- 52.2. by United States Nuclear Regulatory Commission are 10 miles and 50 miles (instead of 800 metres and 3 kms).

Response 18:

As stated in the Revised Draft EIR, it is an assumption that the NNR will accept the EUR's EPZ recommendations during the nuclear licensing process. Initial indications provided by the NNR are that it is likely that the EPZ will be reduced. For instance, in a presentation to the Parliamentary Select Committee on Economic Development on 1 June 2010, the Chief Executive Officer of the NNR stated the following: *“One major outcome of these new designs is that the emergency planning zones, specifically the Urgent Planning Zone, which is the zone within which evacuation of the public has to be catered for, would in all likelihood be reduced from 16 km in the case of Koeberg, to a much smaller radius which could fall within the property owned by the holder ...”*.

ADDITIONAL COMMENTS FROM INDEPENDENT NUCLEAR SPECIALIST

What is stated is correct and the specific requirements will be confirmed as part of the NNR licensing process

Comment 19:

53. Furthermore, the fact that there is only one Generation III nuclear reactor operating means that there is no generally accepted international good practice in relation to safety precautions for Generation III nuclear reactors.

Response 19:

These designs will be reviewed to ensure that it has taken cognisance of the basic nuclear power plant design objectives and the recent events related to Fukushima.

In addition all Generation III designs that will be considered have multiple independent power supplies (diesel generator supplied) and Eskom has indicated that it will be installing a gas turbine

¹¹ Chapter 9 at 9.23.2.

¹² Chapter 9 at 9.23.3.

plant to provide a further diverse electrical supply. These alternative power systems will be shown to meet the NNR public safety requirement

Comment 20:

54. As a result of the nuclear incident in Fukushima, villages 45km from the site were found to be highly contaminated which resulted in these villages being evacuated at a later stage.¹³ With the potentially severe environmental impact a nuclear incident can have on the environment, an adequate emergency plan indicating what tools will be adopted to mitigate the potentially severe environmental harm; the true impact of the development cannot be assessed. The NEMA requires the adoption of a precautionary approach to decision-making. Where the potential environmental harm resulting from an emergency incident may be significant, a detailed emergency plan indicating how this harm to the environment and human health will be mitigated is essential to the decision-making process.

Response 20:

We take note of your comments. However, as indicated in Response 7 and 17 above, aspects of nuclear safety are not within the ambit of the EIA process and development and approval of an emergency plan must take place within the ambit of the NNR's nuclear licensing process.

Comment 21:

55. The Emergency Response Impact Assessment in the revised DEIAR merely sets out a high level description of the emergency plan. The report indicates that a Safety Analysis Report (SAR) will be developed by Eskom prior to a licence being issued by the NNR.

Response 21:

We take note of your comment. Please refer to Response 20.

Comment 22:

56. The Emergency Response Impact Assessment highlights the two requirements for nuclear emergencies. These include infrastructure considerations and functional (response) considerations. An emergency response plan may well require the construction of additional site-specific infrastructure (e.g. new roads to be used for evacuation purposes may be required at Thyspunt but not at other sites). Without an adequate assessment of the emergency response procedures to be adopted, the potential environmental impact of additional roads and infrastructure cannot be assessed and considered. These considerations are particularly significant in considering the cumulative impacts of a development. The additional costs associated with the safety measures that must be put in place have also not been considered in the revised DEIAR.

Response 22:

No additional roads will be required for evacuation purposes. The current road proposals for Thyspunt (one eastern and one western access road) are sufficient for evacuation purposes.

As indicated with regards to the upgrading of other forms of infrastructure such as sewage, Eskom will be responsible for agreeing with local authorities on the apportionment of financial responsibility to upgrade emergency infrastructure.

¹³ Greenpeace Africa submission on Nuclear-1 Revised Draft EIA Report – August 2011 at 6.2 page 21.

ADDITIONAL COMMENTS FROM INDEPENDENT NUCLEAR SPECIALIST

The position is stated that no additional roads will be required and this is part of the evacuation planning basis. It is agreed that infrastructure development is a multi agency issue

Comment 23:

57. The revised DEIAR should have contained the following information to enable a proper identification and assessment of the socio-economic and environmental impacts of responding to emergencies at each site:
- 57.1. a site-specific emergency plan which identifies the additional infrastructure that will be required for emergency responses purposes and an assessment of the consequential environment and socio-economic impacts (these will be different for each site and consequently may affect the selection of the BPEO); and
 - 57.2. the mitigation measures to be adopted in emergency situations at each site.
58. The failure to assess the implications of emergencies (e.g. major disasters) amounts to a failure to comply with the legislative requirement to assess each identified and potentially significant impact. The socio-economic impacts as well as the environmental impacts of any significant emergency incident (e.g. release of radioactive materials) would be very significant indeed.

Response 23:

We take note of your comment. Please refer to Response 20.

Comment 24:

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

59. The revised DEIAR states that:
- “The potential environmental impacts identified and assessed include all potential types of radioactive wastes expected to be generated by the proposed Nuclear-1 Nuclear Power Station. The assessment results indicate that with the implementation of appropriate mitigation measures all potential impacts are low.”
60. The specialist report on Waste Assessment states that radioactive waste management:
- “comprises all the administrative and operational activities involved in the handling, pre-treatment, treatment, conditioning, transport, storage and disposal of radioactive waste. Conditioning of waste typically includes immobilisation and packaging of waste, treatment includes volume reduction and activity removal, while pre-treatment refers to activities such as collection, segregation, chemical adjustment and decontamination.”
61. However the Waste Assessment fails to highlight the cost implications of radioactive waste management or, as highlighted by the LRC, the cost of research and development for finding alternative solutions for storing radioactive waste, to which a solution needs to be found.
62. At present, South Africa does not have an authorised facility for the disposal of high-level radioactive waste. Thus, the only current and feasible alternative is for Eskom to store high-level radioactive waste in spent fuel pools on the Nuclear-1 nuclear island, as is the case at Koeberg. The Fukushima incident in Japan has drawn attention to the danger of keeping spent nuclear fuel rods in pools on the site (as is proposed in this case) and of the inherent risks of nuclear power. For example in Fukushima the event which precipitated the emergency incidents lay beyond the parameters of the risk assessment assumptions which had considered a tsunami wave of approximately 5 meters high but had not considered the possibility of a tsunami wave of approximately 14 meters (which is what occurred). This means that the proposed Nuclear-1 facility must be designed in such a way that such long-term storage within the nuclear island building is possible.
63. The potential impacts and hazards associated with the transportation of low and intermediate radioactive waste have not been adequately considered in the Waste Assessment. It is

apparent that low and intermediate radioactive waste will be transported to and disposed of at the Vaalputs Waste Disposal Site. The future power station will be required to obtain a written authorization in accordance with the NNR Regulations for the transportation of the waste, which will be done at a future point in time. It is clear that a route for the transportation of the waste has not been established. The potential impacts of the transportation of this waste have not been adequately considered in the EIA process, particularly as the risks associated with transportation will be difficult to contain and, depending on the route along which the waste is transported, the socio-economic and environmental impacts must be assessed.

64. In this EIA, inadequate attention has been given to the potential impacts of emergency incidents on the basis that this will be dealt with by the NNR during the process of deciding whether or not to grant a nuclear licence for the operation of the site. However, this ignores the fact that an EIAR must identify and evaluate all potential risks, including emergency incidents.
65. The DEIAR must indicate how the long-term storage of nuclear waste will be dealt with in order to assess the ecological, financial and socio-economic impacts of proposed NPP. As will be appreciated, the enormous cost of storing radioactive waste indefinitely will have a major impact on the cost of the project and will impose a burden on future generations.

Response 24:

The cost implications of radioactive waste management were assessed in the Economic Assessment (Appendix E 17 of the Revised Draft EIR). See Section 3.2.1.3.5 of this report.

Internationally, in situations where there is no long-term storage facility for the disposal of high level radioactive waste, it is an acceptable practice to store high level waste on the site of the nuclear power station. Storage within nuclear island and danger of keeping spent fuel on site - Eskom to respond. The spent fuel pools are designed to have no leakage (they are normally stainless steel lined reinforced concrete design – also see fukushima comment

Impacts of waste transport

Your following statement refers: "It is clear that a route for the transportation of the waste has not been established". This is not factually correct. Please refer to the Transport Impact Assessment (Appendix E 25 of the Revised Draft EIR), which contains illustrations of the proposed transport routes to Vaalputs. Low Level Waste and Intermediate Level Waste will be transported in sealed drums (metal drums and concrete drums, respectively) that prevent the escape of radiation into the environment. This is an internationally acceptable practice that will be undertaken in terms of the conditions of the National Nuclear Regulator and the IAEA Regulations for the Safe Transport of Radioactive Material, In terms of the Regulations, the transport process is subject to radiation protection, emergency response, quality assurance and compliance assurance programmes. Such waste transport to Vaalputs has continued to take place from Koeberg Nuclear Power Station successfully for several decades.

We take note of your comments regarding emergency incidents. However, as indicated in Response 7 and 17 above, aspects of nuclear safety are not within the ambit of the EIA process and development and approval of an emergency plan must take place within the ambit of the NNR's nuclear licensing process.

The nuclear waste assessment (Appendix E29 of the Revised Draft EIR) indicates how long-term storage of waste is proposed to be managed, both at Vaalputs Nuclear Waste Site and at the power station site. Eskom makes financial provision for the long-term storage of high level waste on the power station site in the power station's operation budget.

ADDITIONAL COMMENTS FROM INDEPENDENT NUCLEAR SPECIALIST

The IAEA transport regulations are well established and form the basis for international transport of all radioactive materials including medical and industrial isotopes and nuclear fuel cycle components of which the former account for by far the majority of transport operations globally

Comment 25:

66. In our comments submitted in respect of the DEIAR, we indicated that a “precautionary approach” should be applied by the DEA when considering the storage, transportation and handling of hazardous waste (see paragraphs 78 and 79), particularly in light of the fact that the Waste Assessment highlights the lack of an authorized facility for the disposal of high level waste in South Africa.¹⁴ In response to these comments, the EAP stated that the impacts of handling and storage of radioactive waste falls firmly in the ambit of the NNR, based on a co-operative governance agreement between the (then) DEAT and the NNR signed in 2007. We refer to comments in our submission in respect of the DEIAR (paragraphs 7-12) that the mandates of the DEA and the NNR are clear and by agreeing to allow material impacts to be considered by the NNR, the DEA has abdicated its responsibility to consider material impacts (as legally required) in the EIA process.
67. The revised DEIAR includes numerous assumptions in respect of the study, including an assumption that “in terms of the Constitution...and the NEMA, it is assumed that the DEA is responsible for assessing the potential impacts of the power station on the environment. It is further assumed that in recognition of the dual but distinct responsibility with respect to the assessment of radiation hazards, the DEA, is the lead authority on environmental matters and the NNR is the decision-making authority with respect to radiological issues.” The potential environmental and socio-economic impacts of radiation hazards are both evident and of critical concern in the EIA process. Actual and potential environmental impacts must be considered in the EIA process, including cumulative impacts. Regulation 31(1)(l) requires “an assessment of each identified potentially significant impact” which includes “cumulative impacts.¹⁵” A “significant impact” includes “an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.¹⁶” The potential and actual radiation hazards are significant and will affect the assessment of cumulative impacts at each of the proposed sites, and will affect the assessment of the no-go option.

Response 25:

We take note of your comment. In this regard, please refer to Response 7 and 17 above.

We reiterate that it is not within the mandate of the Environmental Assessment Practitioner to question the legal mandates of either the DEA or the NNR, or to question the validity of their co-operative agreement. We must, therefore, conduct the EIA based on their existing mandates and their agreement.

Comment 26:

68. Further, we draw attention to aspects of procedural fairness, where the public participation processes under the NNRA are narrower than those prescribed in NEMA and the EIA Regulations for the EIA process. The potential impacts associated with transporting, handling and storing radioactive waste (and in particular high level waste) are critical, particularly in light of nuclear and radioactive safety and are of great public concern (see paragraphs 60 and 63.2 of the Draft EIA comments).

Response 26:

We take note of your comments regarding the differences in the public participation approaches required under NEMA and the NNRA. However, all public participation processes under the control

¹⁵ Regulation 31(l)(i).

¹⁶ Regulation 1.

of organs of state are bound by the requirements of the Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000).

Comment 27:

12. INCOMPLETE INFORMATION

69. Numerous uncertainties in the DEIAR have not been addressed in the revised version and significant important information has still not be provided. This includes information in relation to:
- 69.1. detailed designs, cross sections or layouts of new planned access roads, sea tunnels, pumping tunnels, the open Cycle Gas Turbine, and desalination plants or waste water works;
 - 69.2. whether or not mixed oxide fuels will be used (the use of mixed oxide fuels changes the safety parameters and accordingly the potential risk of harm and extent of the impact);
 - 69.3. possible "source terms" (i.e. how long the fuel will remain in the reactor which affects how radioactive it becomes) which is relevant to assessing the potential risks and impacts of operating the reactor.

Response 27:

As indicated in the EIR, the assessment of the impacts of the proposed nuclear power station are based on the Consistent Dataset, which combines the inputs and outputs of a number of commercially available Generation III power station designs.

Layouts of the access roads, particularly for the Thyspunt site, are illustrated in the Revised Draft EIR and the nature of these roads is specified. Diameters of intake and outlet tunnels, as well as the number of these tunnels, are specified. The approach in the EIA process has been to allow the relevant specialists (e.g. the marine specialist with regards to the tunnels) to specify the maximum allowable dimensions and numbers of the tunnels. The impacts of the brine disposal from the desalination plant (based on predicted concentrations and volumes, in turn based on the expected volumes of drinking and construction water that would be required) have been assessed in the marine assessment and have been found to be insignificant.

Furthermore, sensitivity maps provided by the range of relevant specialists have been overlaid for each site and the preferred footprint for the power station has been defined to exclude areas of high sensitivity on the sites. The EIA team defined this preferred footprint independently of the spatial requirement that Eskom has specified it would require. In most cases, the environmentally preferred footprint is smaller than the area required by Eskom. Eskom will be bound by the preferred footprint, should authorisation be granted, and will have to place all necessary infrastructure within this footprint, thus avoiding sensitive areas. Should all necessary infrastructures not fit within this footprint, some of the infrastructure such as administrative buildings may have to be placed off-site.

Design details can only be assessed when the vendor design is known and during the NNR licensing process which allows for public hearings to consider public concerns such as those raised in this comment

Comment 28:

13. RELIANCE IS PLACED ON INCORRECT, UNVERIFIED AND IRRELEVANT INFORMATION

70. In this regard we reiterate our comments in respect of the first DEIAR and to the comments in **Annex A** and reiterate our view that information in the revised DEIAR is insufficient to justify the selection of the Thyspunt site as the BPEO.

Response 28:

We take note of your comment and refer you to our responses above.

Comment 29:**14. SPECIALIST STUDIES INADEQUATE**

71. In this regard we reiterate our comments in respect of the first DEIAR (paragraphs 83 and 84) and to the comments in **Annex A**.
72. In responding to those comments the EAP rejected our client's assertion that potential debris flows at the site posed a risk and stated "after detailed investigations, it was found that no evidence of this having occurred at or close to the site, of the conditions that would enable debris flow to take place." (p 27)
73. A specialist report of Ellery and Elkington which are attached to these comments indicating the EAP and its specialists are incorrect.

Response 29:

Dr. Werner Illenberger and GIBB as the EAP have responded to the matter of debris flows in a number of correspondences with yourselves and other Interested and Affected Parties and Stakeholders. As you have raised no substantively new issues in this submission we refer you to said correspondence. However please take note that all information received have been captured and will be included in the final submission to the DEA for decision making.

Comment 30:**15. FLAWED METHODOLOGY****15.1 Methodology for the assessment of impacts**

74. Our client has made detailed comments in relation to the methodology adopted for the assessment of impacts. These are attached as part of **Annex A** to these submissions.

15.2 Characterising the NPP as beneficial to conservation and heritage

75. In their letter response to us the EAP argue that Eskom is already engaged in active conservation at all of the sites but simultaneously argues that if the NPP is not built at Thyspunt, the site will continue to deteriorate due to the spread of alien invasive plants. The short point is that Eskom must comply with its legal obligations to eradicate alien invasive plants regardless of whether or not a power station is built.
76. The logic of the specialists appears to be that the only viable way of conserving areas of flora and fauna is to allow a major industrial installation to be built within them and then to exclude people from the remainder. In considering the impacts on terrestrial vertebrate fauna the revised DEIAR states that.

"highly significant potential conservation offsets are possible at Thyspunt if the undeveloped land is declared a nature reserve and managed as such."¹⁷

In considering the impacts on terrestrial invertebrate fauna it is stated that;

"Thyspunt...would benefit substantially from getting formal protected status. Thus the proposed project would have a potential net positive impact on invertebrate communities at...Thyspunt."¹⁸
77. A similar conclusion is drawn in the Heritage Assessment report. This is a reductionist approach which fails to take account of the impact of large industrial undertakings on the landscape and in this case the significant risk which the NPP poses not only to human safety but also to other aspects of the environment.

¹⁷ Executive Summary at page 13.

¹⁸ Executive Summary at page 13.

78. The logic of this approach suggests that the most effective conservation strategy would be to promote the establishment of large industrial facilities which pose such a significant and inherent risk that exclusion zones must be maintained around them, in the most ecological sensitive and conservation worthy areas of the country. This is clearly absurd. The construction of an NPP in an area of very high biodiversity and heritage significance is unwise, unjustifiable and detrimental to the cultural and natural heritage of South Africa. To argue the contrary, as the revised DEIAR does, is irrational and misleading.

Response 30:

Eskom is currently already engaging in an active alien eradication programme on the Thyspunt site, irrespective of whether or not it is developed as a power station site.

As indicated in the revised Draft EIR, a maximum area of approximately 280 ha is required for the power station. Thus, only a small portion of the site will be developed. The land currently owned by Eskom at Thyspunt is 1638 ha. Thus, if 280 ha is used for development, it would leave approximately 83% of the site undeveloped. At Duynefontein, where the Eskom owned property is 2849 ha, even a larger proportion of the site is undeveloped and dedicated to nature conservation. Indeed the indiscriminate development of industrial zones would be a threat to ecological systems. However, every EIA process must examine the merits of the particular project, which in this instance do not involve indiscriminate development across the entire site. Development of the nuclear power station is proposed to be focused on a specific concentrated footprint, which has been defined for its low environmental sensitivity, leaving more than 80% of the property free for conservation. In the absence of any significant efforts to establish conservation areas along the affected stretch of coastline (with the exception of the Rebelrus conservancy) and the vigorous alien vegetation encroachment throughout the St. Francis region, the possibility of the development of a *de facto* nature reserve is indeed considered to be a significant offset benefit for conservation.

Comment 31:

15.3 Methodology use to compare the three sites

79. The weighting system adopted for assessing the impacts of the NPP at the three sites has been altered in the revised DEIAR however remains inaccurate and its application unclear.

80. The methodology used by the EAP to compare the three sites is self-evidently defective because it results in the conclusion that the Thyspunt site is the best alternative (i.e. the BPEO) despite the fact that:

- 80.1. the environmental impacts of constructing an NPP there will be significantly more severe than at the other two sites; and
- 80.2. the potential impacts on cultural heritage at the Thyspunt site are inmitigable resulting in a fatal flaw.

81. Numerous conclusions throughout the revised DEIAR indicate the potentially severe environmental harm at the Thyspunt site and numerous specialist reports indicate that the environmental impacts at the Thyspunt site will be significant, even with the adoption of mitigation measures. The executive summary of the revised DEIAR highlights the following points, among others.

- 81.1. The potential impact of the development on flora at the Thyspunt site is significant and "Thyspunt has by far the greatest diversity of vegetation communities, including extensive and highly sensitive wetlands... Thyspunt will experience the highest level of impacts.¹⁹" The above impacts are likely to result in profound degradation of a system that presently exists as a relatively un-impacted mosaic of terrestrial and wetland habitats, with high levels of interconnectivity and high overall biodiversity value, to which the wetland systems make a significant contribution. The potential cumulative impacts of the proposed development of a single nuclear power station at the Thyspunt site without implementation of mitigation measures has been assessed to be of high negative significance.

¹⁹ Executive Summary at page 12.

- 81.2. The impact of the development on wetlands is deemed the most significant at the Thyspunt site. The executive summary states:
 “without mitigation, the development could result in profound degradation of relatively unimpacted wetlands systems....The onus is on Eskom to ensure that mitigation measures are put in place to meet the requirements to protect the wetlands and extend the conserved area of wetlands....”
- 81.3. “Thyspunt has in all probability the highest butterfly diversity and conservation value of the alternative sites. This together with a high ant diversity and the *Onchyophoran* species indicate that Thyspunt has significant conservation value. Thyspunt is therefore considered to be more sensitive to development than Duynefontein, and only marginally lower than Bantamsklip. If development is pursued at Thyspunt, further monitoring of faunal communities and mapping of vegetation habitats would be required.²⁰”
- 81.4. The Geo-hydrology assessment indicates that the overall sensitivity at Thyspunt is low to medium, but in Wetland areas the sensitivity is high, unlike the two alternative sites where the sensitivity is low.²¹
82. The revised DEIAR indicates that the Thyspunt site is the preferred site on the basis of environmental and technical factors, a statement which is contradicted by the statement that the Thyspunt site is more sensitive from a biophysical and heritage perspective than the other two proposed sites.²²

Response 31:

From a biophysical perspective, there are sensitive ecosystems on the larger Thyspunt property, but the proposed power station has been positioned on the site in such a way as to avoid these sensitive systems. The specialist studies have assessed the impacts as if a worst case scenario impact would occur, i.e. as if the most sensitive elements of the site would be affected. However, the most sensitive elements of the Thyspunt site, namely the mobile dune system and the wetlands (particularly the Langefontein wetland) have been avoided. Furthermore, wetland and groundwater modelling has confirmed that the water table that feeds the majority of the Langefontein wetland is not geo-hydrologically connected with the water table where the power station is to be built. This confirms that mitigation measures proposed to prevent drawdown of the water table in the Langefontein wetland during construction are feasible.

Your quotation above regarding the significance of wetland impacts refers. Please note that that the quote refers specifically to unmitigated impacts. However, the proposed placement of the power station and associated infrastructure outside of the wetland zones avoids these impacts. Furthermore, the wetland specialist report supports development, provided that mitigation (including the acquisition and effective conservation of threatened wetlands currently not owned by Eskom) is applied. Eskom has consistently indicated its willingness to implement these measures and has already embarked upon the acquisition of such properties.

With regard to invertebrate biodiversity, the proposed monitoring programmes have been initiated.

Your reference to the findings in the geo-hydrological assessment refers. Again, it must be emphasised that none of the sensitive wetland areas will be disturbed.

Comment 32:

15.4 Process review of Draft EIA

83. The EAP responded to criticisms of the EIA process by appointing two other EAPs to undertake a review of the EIA process (this did not involve reviewing the specialist reports).
84. While we agree with certain conclusions of the reviewers, in our opinion the reasoning used to support the main conclusions is irrational, for the reasons set out below.

²⁰ Executive Summary at page 13.

²¹ Executive Summary at page 10.

²² Executive summary at page 6.

85. The reviewers state that if the potential impacts of undertaking the proposed activities at a particular site are found to be intolerable, the site should be regarded as being fatally flawed and should in fact be disqualified from any further consideration as a possible site for the power station. (pages 18 and 19). The reviewers also stated:

“there is no provision in the impact ranking for an impact greater than “high” – hence “high” must include the most unacceptable case. In these terms, and given the multiple impacts identified as being of high significance for all 3 sites (see table 2) it would not be unreasonable to expect that all three sites would be disqualified. Contrary to this, all the specialists agreed that there were no fatal flaws in any of the three sites. This again suggests that the impact significance has been exaggerated in the EIA.”

86. The ranking of impacts as “high” is based on the specialist reports which the reviewers did not review. It is clear from many of the specialist reports (some of which, in our client’s view, understate the impacts) that there are sound reasons for ranking many of the impacts at Thyspunt as “high”. Therefore logically, unless it can be established that the specialists were incorrect (which the reviewers do not do) the fact that the impacts on the environment and on cultural heritage at Thyspunt are high and cannot be significantly mitigated should mean that the Thyspunt site has fatal flaws and should be excluded from consideration. (This follows the argument advanced by the reviewers which is referred to above.)
87. The heritage studies and specialist studies as well as the additional studies undertaken on behalf of our client, confirm that not only are the impacts of building an NPP there high, but in some cases they have been underestimated in the specialist reports contained in the revised DEIR. In fact the Thyspunt site is a classic example of a site that should be excluded from consideration as the site of any major industrial development, let alone an NPP. The South African Heritage Resources Agency (“SAHRA”) has indicated that no development should take place there; having been identified as a critical biodiversity area, and constructing an NPP there would have severe environmental impacts on both terrestrial and marine ecosystems (which are currently poorly understood).
88. However instead of reaching the logical conclusion that the Thyspunt site should be excluded from further consideration, the reviewers start with the conclusion in the DEIAR that none of the sites have fatal flaws and work backwards to conclude that the only way in which such a conclusion could be valid despite the number of high impacts identified, is if the impacts were exaggerated. Without demonstrating any flaws in the specialist reports (which they did not review) the reviewers conclude that there has been a general exaggeration of the significance of the impacts (the factual basis for this conclusion is not apparent).
89. The reviews compound this error by reasoning that if all of the sites are potentially suitable from an environmental perspective because the DEIAR says that none of them suffer from fatal flaws, then it is legitimate to identify the preferred option primarily on the basis of the relative ease and cost of connecting the proposed NPP to the grid.
90. The relative ease and cost of connectivity to the grid is primarily relevant to determining whether or not it is feasible to develop an NPP on the site. The applicant (Eskom) has indicated that it is reasonable and feasible to build an NPP at any of the 3 sites. Once that determination has been made the relative ease and cost of connectivity to the grid should only have a marginal and indirect impact on the decision-making process (i.e. they are only relevant insofar as they affect the environmental and socio-economic impacts of the proposed listed activities). These so-called “technical” issues cannot be used as a basis for overruling environmental considerations. Any weighting system which allocates a preferred site based on a disproportionately high weighting to ease of connectivity to the grid and the supposed benefits to the Eastern Cape economy where the site has also been identified as having the greatest environmental and heritage impacts, is clearly fatally flawed and misleading.
91. Furthermore, it is doubtful whether the competent authority is entitled to take account of issues such as ease of connectivity to the grid and the cost of constructing the NPP except to the extent to which these factors are shown to have socio-economic or environmental impacts. In this case these factors are given such a high weighting that they become decisive in selecting Thyspunt as the preferred option and therefore the BPEO.
92. The specialist reports and the stance adopted by SAHRA make it clear that the Thyspunt site should be excluded from further consideration. The fact that the scoring system is weighted in

a manner that transforms a site that should have fallen out of consideration completely, into the preferred option, is an indication of the deficiencies in the weighting system.

93. Furthermore, the fact that the revised DEIAR rates a site that is clearly unsuitable for environmental, heritage and geomorphological reasons as the preferred option creates a strong perception of bias (as recognised by the reviewers). The reviewers suggested that this perception be corrected by including a credible explanation for this in the revised DEIAR. This has not been done and accordingly the perception of bias remains.
94. In our view, it would be unlawful for a competent authority to authorise the selection of the Thyspunt site as the best practicable environmental option because the facts simply cannot sustain such a conclusion and consequently any such decision based on the revised DEIAR could be set aside by a court as being irrational.

Response 32:

In response to the reviewers' comments on the Draft EIR, the criteria for rating of impact significance were accordingly changed to provide a more realistic assessment of impact significance and to prevent a situation where, as stated above, impacts are rated as high, in spite of the specialists not identifying any fatal flaws. The concern behind the statement of the reviewers was that the specialists tend to rate impacts unnecessarily high, as a precaution. For instance, specialists would assume that the most sensitive elements of the site would be destroyed, without having regard to the fact that the proposed development footprint would avoid such sensitive elements.

The criteria for assessment of impact significance were accordingly amended in consultation with the specialists to ensure their agreement with the meaning and application of the criteria. One of the outcomes of the revision of impact criteria was a change from only three significance categories (low, medium and high) to five categories. Thus, if an impact is still found to be of high significance with mitigation after application of the new criteria, there is a greater possibility that it could be regarded as a fatal flaw. After application of these revised criteria, there are very few impacts that remain high after mitigation (one each at Duynfontein and Thyspunt and two at Bantamsklip).

With reference to the heritage impacts, extensive field surveys were conducted during 2011 to confirm the occurrence of heritage features within the proposed footprint of the power station. These studies confirmed, as suspected, that the sensitivity of these features is low. This confirms that the heritage impacts at Thyspunt can be mitigated. Eskom has, throughout the EIA process, committed itself to implementing an extensive heritage mitigation programme .

Your reference to the identification of Thyspunt as a critical biodiversity area refers. Kindly provide a substantiation of this statement, as no such identification is known to the EIA team.

The transmission integration factors are indeed relevant, as they play a critical role in the site selection decision. Seismic factors, which are also technical factors, equally play a critical role in the site selection decision. Contrary to your statement that technical factors "override" environmental factors, they have been considered together and do not result in the elimination of environmental factors as decision-making criteria. Since no "clear-cut" preferred site emerged from the analysis of the environmental impacts, an analysis of all relevant factors, including technical factors, was considered appropriate to identify the recommended site. With regard to the perception of bias, all assumptions employed in the site selection recommendation were clearly articulated in the Revised Draft EIR. The reasons for the allocation of particular values to decision factors, as well as the weighting of these factors, were explained in a transparent manner. We take note of your view regarding the decision of the competent authority.

Comment 33:**16. HERITAGE RESOURCES AT THE THYSPUNT SITE**

95. The Heritage Assessment report included in the revised DEIAR as well as the revised DEIAR indicate that the impacts of a NPP on human cultural heritage and landscape will be the most significant at the Thyspunt site where archaeological and paleontological heritage is diverse and prolific. The Thyspunt site is therefore deemed the least preferred site from a heritage perspective, however this is ignored in the revised DEIAR, as the Thyspunt site remains Eskom's preferred site. Indications are clear that mitigation is going to be technically difficult to achieve due to the character of the site, difficulties with respect to accessibility and will be extremely lengthy and costly.²³ The Heritage Assessment considers the no-go alternative and its impacts on the various sites from a heritage perspective. The specialist takes the view that the *status quo* would be maintained until such a time as alternative land uses are adopted. The specialist states that:

“Eskom has indicated that land will be sold if it cannot be used for power station development. Should any of the sites be used for property development, it is likely that heritage impacts in terms of archaeology and landscape will be severe. While the development of a nuclear power station on any of the proposed sites will result in substantive impacts, the conservation of landscapes within of the owner-controlled zone as well as possible biodiversity offsets will be advantageous for heritage conservation in the long term.”

96. These conclusions are absurd in respect of the current EIA process. Even if Eskom were to sell the site any future property development would not be authorised without an EIA and heritage assessment and in view of the extraordinary value of the area as a cultural landscape, there is no reason to believe that developments that have a severe impact on archaeology or the landscape would be permitted. The potential impact of property development in the long term (as a potential future land use) cannot be used to justify the destruction of the heritage value of the land in the short term as a result of the construction of a NPP.

97. A Heritage Mitigation Study has been compiled as part of the revised DEIAR even though the South African Heritage Resources Agency (the “SAHRA”) has indicated that it does not support the development of a NPP at Thyspunt due to the significant heritage value of the site.²⁴ In addition, the heritage impact of the proposed NPP at the Thyspunt site cannot be accurately determined for the following reasons:

- the design parameters of the NPP will have a significant effect on the severity of the impacts on heritage sites at Thyspunt;²⁵
- the true cultural value of the site can only be determined once trial excavations at the site are undertaken;²⁶ and
- without a clear understanding of the potential and actual impacts on heritage sites, mitigation criteria and a mitigation strategy cannot be established or determined.²⁷

98. The SAHRA do not support mitigation through excavation as has been proposed in the revised DEIAR, as this approach is unfeasible and not in the interest of overall heritage conservation. Section 35(4) of the National Heritage Resources Act, 25 of 1999 (the “NHRA”) declares that no person may damage, destroy or excavate any archaeological or paleontological site without a permit issued from the competent heritage authority. Therefore excavation work at the Thyspunt site cannot be undertaken without the necessary approval. When exercising any power or performing any function in terms of the NHRA, including granting a permit for excavation, the competent heritage authority must consider the following principle:

²³ Heritage Assessment at 4.3.

²⁴ Heritage Mitigation Study at 1.

²⁵ Heritage Mitigation Study at 3.1.

²⁶ Heritage Mitigation Study at 3.1.

²⁷ Heritage Mitigation Study at 3.1.

“Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and as they are valuable, finite, non-renewable and irreplaceable they must be carefully managed to ensure their survival.”²⁸

99. The Heritage Assessment Report indicates that wilderness qualities of the Thyspunt site are exceptional and substantially contribute to the “character of the region and the contiguity of the strong cultural landscape qualities of the place.”²⁹
100. Based on the above, the competent heritage authority cannot grant a permit for the excavation of the Thyspunt heritage sites without complying with the general obligations and principles set out the NHRA. In doing so the competent heritage authority would be acting unlawfully.
101. The Mitigation Study indicates that the SAHRA has the option of declaring the Thyspunt cultural landscape a National Heritage Site, resulting in the SAHRA having the power to dictate the future of proposed activity in the area.

Response 33:

Your views regarding the alternative forms of land use not being authorised are noted. However, unfortunately recent history of residential and golf estate developments in the St. Francis region contradict your statement. Even though these developments have been subjected to EIA processes, development of these sites has caused extensive destruction of heritage resources, without sufficient mitigation having been undertaken. There is, therefore, reason to believe that other developments having a severe impact would be permitted. It must be borne in mind that developments are not always planned on a large scale. Small developments that individually have insignificant impacts can eventually have highly significant impacts when their cumulative impact is considered. This is especially the case with the development of urban areas, especially along the coastline.

It is in recognition of such potential cumulative impacts of individual development decisions and in view of recent development history around St. Francis that all biophysical specialists as well as the heritage impact assessment specialist consider the conservation of the majority of the Thyspunt site through the development of the power station to be of benefit for conservation.

Your quotations from the heritage impact assessment refer. It is stating the obvious that the design parameters of a development will affect the severity of the impacts. It does not necessarily imply that the impacts are severe. Through positioning of the power station footprint in the area of lowest heritage sensitivity (at least 200m from the coast where the majority of the archaeological sites are located), impacts on the most valuable heritage resources have been avoided. The passage quoted from indicates uncertainty about the nature of all the heritage impacts and the necessity for trial excavations to increase the degree of certainty. Such trial excavations have been undertaken during 2011 and the results confirmed a very low incidence of heritage sites within the recommended power station footprint, which is situated in the vegetated dunes. The archaeologist’s deduction is that the location of archaeological sites corresponds strongly with sources of fresh water. Archaeological sites are concentrated in the mobile dunes (where there are permanent polls in the dune slacks) and close to wetlands and fountains along the coastline, the eastern portion of the site and outside the site towards the St. Francis Links golf course. With this improved knowledge, the heritage specialist is now in a much better position to define a heritage mitigation strategy. His conclusion is that impacts on archaeological sites can be minimised, provided that the power station is located within the vegetated dunes, at least 200m from the coastline (as is indeed the case with the recommended power station footprint).

Heritage mitigation through excavation is indeed not normally supported, as in situ conservation of heritage resources is always preferred. However, as indicated above, trial excavations indicate that

²⁸ National Heritage Resources Act, 25 of 1999 at section 5(1)(a).

²⁹ Heritage Assessment Report at 6 (page 78)

minimal excavation will be required as long as the power station is positioned on the vegetated dunes.

Comment 34:

17. APPREHENSION OF BIAS

102. The socio-economic impact report has only considered the benefits of remunerating workers at the NPP but still fails to address the potential impact on consumers and taxpayers associated with funding the construction and decommissioning of the NPP.
103. In the response to our Draft EIAR submissions, it was indicated that 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.” Although factors such as technical specifications and cost are relevant in the EIA process, section 2 of the NEMA requires that environmental management must pursue the best practicable environmental option which is 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.”³⁰
104. It is clear from the specialist reports, firstly that the Thyspunt site is wholly unsuitable for a major industrial development and should have been excluded from consideration because of the existence of high impacts that cannot satisfactorily be mitigated. Secondly, even if Thyspunt were not excluded from consideration, the fact that the environmental and heritage impacts of constructing an NPP at Thyspunt are substantially more severe than at either of the other two sites means that it cannot possibly be the best practicable environmental option. The fact that Thyspunt is Eskom’s preferred site and the methodology applied by the EAP to compare the three sites results in Thyspunt being recommended as the BPEO creates suspicion that the EAP is not fully independent and we reconfirm our comments submitted in respect of the DEIAR (paragraphs 90 and 91).
105. In this regard it is worth noting that in the recent case of *S v Frylinck and another* an environmental assessment practitioner (EAP) was convicted in terms of regulation 81(1)(a) of the Environmental Impact Assessment Regulations, 2006, for providing incorrect and misleading information in a basic assessment report. A failure to place all relevant information before a decision maker may result an EAP being convicted of a crime in his or her personal capacity.

Response 34:

We take note of your comments.

It is agreed that the Best Practical Environmental Options principle in NEMA must apply to decision-making. The aim of impact assessment is precisely the judge whether the costs are acceptable to society. In making this judgement, consideration must be given not only to the direct costs to those that will be disadvantaged, but also the costs and benefits to society as a whole, as well as whether the costs can be mitigated. As indicated in the Revised Draft EIR, there are no fatal flaws at any of the sites, and the impacts can be mitigated. For a strategically important project such as this, which is designed to ensure South Africa’s security of electricity supply, it would be difficult to argue that the mitigable costs of the project outweigh the benefits to society at large.

Our assertion that the impacts cannot be successfully mitigated is not supported by the findings of the specialist studies. Arguably the most significant impacts at Thyspunt are heritage impacts and wetland impacts. Specialist studies of both these disciplines have confirmed that impacts on wetlands and heritage resources can be mitigated.

³⁰ NEMA definitions section 1

Comment 35:**18. CONCLUSIONS**

106. The EAP has dismissed and failed to address substantively almost all the comments which we submitted in relation to the first DEAIR and accordingly the revised DEIAR is also defective and in our view, could not form the basis for a decision to authorise the construction of an NPP at Thyspunt.
107. The defects in the revised DEIAR include:
- 107.1. material gaps in the information required by the decision-maker to make a properly informed decision;
 - 107.2. a failure to comply adequately or at all with mandatory legal requirements, including the requirements to assess the “no-go” option; to identify and assess reasonable and feasible alternatives, and to identify and assess the potential environmental and socio-economic impacts of each alternative; and
 - 107.3. the application of inaccurate and misleading methods of evaluating the significance of the impacts identified and of comparing the relative methods of the three possible sites which produces the absurd result that the Thyspunt site has been identified as the preferred option despite the fact that the expert reports clearly indicate that it is the least suitable site from both an environmental and a heritage perspective.

Response 35:

We take note of your opinions and refer you to our responses above, which respond in detail to your contentions.

Yours faithfully
for GIBB (Pty) Ltd



Nuclear-1 EIA Team